MAY, 1971

WEEDS TREES and TURF

TALE OF TWO CITIES' AIRPORTS

DU PONT CAN HELP YOU STOP WEED POLLUTION PROBLEMS!

• Slash maintenance costs • Cut fire hazards
• Reduce equipment losses • Improve plant appearance

Use of a chemical control program based on Du Pont weed and brush killers is a fast, effective and cost-saving way to eliminate unwanted weeds and brush . . . and the many problems they cause.

To help you solve these problems, Du Pont has developed recommended weed- and brush-control programs designed for your area. The base of these programs is, of course, time-proven and dependable Du Pont HYVAR® bromacil weed killers. They are available in wettable powder form as HYVAR X, in easy-to-use liquid form as HYVAR X-L and as dry pellets as HYVAR X-P. Du Pont approved products containing bromacil also may be used to provide excellent control.

Let us show you how HYVAR bromacil weed and brush killers can work into your vegetation control programs. Write today for printed recommendations of programs designed specifically for your geographic area. Get the facts now and put a stop to weed pollution.

With any chemical, follow labeling instructions and warnings carefully.

DU PONT
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Du Pont Company
Industrial and Biochemicals Dept.
Room N-22316-3
Wilmington, Delaware 19898

I need more information about
Du Pont chemical control of weed pollution.

☐ Send literature and industrial weed control recommendations for my area

☐ Have Du Pont representative call

Name

Company/Dept.

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How to get the most for your saw chain dollar

Only your Oregon saw chain dealer offers you nine ways to go—with the Oregon team of saw chains, Power Mate bars, sprockets and accessories. Want high performance in a special situation? You don't have to "make do" with a general purpose chain. Oregon's high-quality, value-packed timber cutting products let you choose the right one for *your* job—land clearing and maintenance of golf courses, parks and utility right-of-ways. All Oregon products carry a Life Long Guarantee.

OREGON—a cut above the rest.

OREGON AUTHORIZED SALES AND SERVICE

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CHAIN SELECTOR CHART

Cutting Job	Chain	Saw Size	Performance			Filing Method		Remarks
			Cutting Speed	Smoothness	Wood Cut per Chain	Recommend Round File and Holder	Requires Special Filing Technique	
Competition (for use in cutting contests)	80 Series	2 cu. in. larger	1st in wood under 30" diameter	1st	2nd		X	Fastest, smoothest chain made. For wood under 30" diameter. Use top file guide or sharpen automatically on saws equipped with "Power-Sharp."
	Chisel	4 cu. in. larger	1st in wood over 30"	2nd	1st		X	Fastest "Big Timber" chain. Sharpen with a chisel file.
Big Timber (wood over 30" in diameter)	Chisel	4 cu. in. larger	1st	1st	1st		X	Preferred by pros in "Big Timber." File with a chisel file. No file holder required. Not a chain for the week-ender. ½" pitch.
	Super-Chisel	3 cu. in. larger	2nd	2nd	2nd	X		A pro chain sharpened easily with a round file. Also available in chisel grind for sharpening with a chisel file .404" pitch.
	Micro-Chisel	2 cu. in. larger	3rd	3rd	3rd	X		New design. A chain of the future. Comes in a variety of sizes. Easy maintenance with round file and holder. Excellent in all woods.
	Micro-Bit	4 cu. in. larger	4th	4th	4th	X		Easy to sharpen. Not for small saws.
	Chipper	1.5 cu. in. larger	5th	5th	5th	X		Least expensive. Good general purpose chain. All sizes. ½" pitch standard on most gear drive saws.
Pulpwood and timber under 30" in diameter	80 Series	2 cu. in. larger	1st	1st	5th		X	Automatically sharpened on saws equipped with "Power-Sharp" or use top file guide (See Line 1).
	Super-Chisel	3 cu. in. larger	2nd	2nd	2nd	X		Good in all woods. Easy maintenance with a round file. Also available in chisel grind. .404" pitch.
	Micro-Chisel	2 cu. in. larger	3rd	3rd	3rd	X		New design makes this best all around performer. Easy maintenance with round file and holder. Fits most saws.
	S-70	2-6 cu. in.	4th	4th	1st	X		Long chain life. Fine all-around performer. ⅜" pitch.
	Chipper	1.5 cu. in. larger	5th	5th	4th	X		Least expensive. ½" pitch standard on most gear drive saws. Easy maintenance.
Limbing where kick-back is a problem	87	2 cu. in. larger	1st	1st	3rd		X	.325" pitch. Automatically sharpened on saws equipped with "Power-Sharp" or use top file guide (See Line 1).
	Speed-Guard	2-6 cu. in.	2nd	2nd	1st	X		Long chain life, easy maintenance with round file and holder, ⅜" pitch.
	Micro-Guard	4 cu. in. larger	3rd	3rd	2nd	X		.404" pitch. Designed for larger saws.
Farm choring and occasional use	80 Series	2 cu. in. larger	1st	1st	4th		X	Automatically sharpened on saws equipped with "Power-Sharp" or use special guide for "Goof-Proof" filing (See Line 1).
	Micro-Chisel	2 cu. in. larger	2nd	2nd	2nd	X		New design makes chain top all-around performer. Fits all saws including lightweights.
	S-70	2-6 cu. in.	3rd	3rd	1st	X		Long chain life. Fine all-around performer. ⅜" pitch.
	Chipper	1.5 cu. in. larger	4th	4th	3rd	X		Least expensive. Easy maintenance. ½" pitch is standard on most gear drive saws.

Keep this chart

OREGON Saw Chain Division
OMARK INDUSTRIES

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WEEDS TREES and TURF®

Volume 10, No. 5 May, 1971

Gene Ingalsbe
Editor

Arthur V. Edwards
Editorial Director

Eric Lindsay
Advertising Production

Hugh Chronister
President and Publisher

Dan M. Humphrey
Vice-President, Advertising

D. D. Langley
Director of Circulation

ADVERTISING SALES OFFICES

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William Schmunk

Chicago, Illinois 60601
333 N. Michigan Ave./312+236-9425
John Kielp

Shawnee Mission (Kansas City), Kansas 66202
6811 W. 63rd St./913+722-5900
Austin Schnacke

New York, New York 10017
757 Third Ave./212+421-1350
Russell Bandy

Columbus, Ohio 43212
1350 W. Fifth Ave./614+486-9638
James Murney

Lansing, Michigan 48906
4415 N. Grand River/517+372-5254
Paul Bundschu

Los Angeles, California 90005
The Eschen Company
3142 Wilshire Blvd./213+382-8391
Henry Eschen

San Francisco, California 94104
The Eschen Company
57 Post St./415+781-7440
Rod McDonald

Special for This Issue

Tale of Two Cities' Airports **18**
A visit with the grounds superintendents at Chicago's O'Hare Field and Houston Intercontinental reveals 12 tips on vegetation management.

Gypsy Moth: Nature's Ecology Disrupter **26**
Northeast U.S. is bracing for an even worse infestation of gypsy moths. This article discusses control approaches, including chemical, biological and physical.

When the Chinch Bugs Struck, They Called a 'Copter **32**
Guy Tedesco, greens superintendent at the New Seabury, Mass., Country Club, describes how he used a helicopter to spray Aspon.

To Heal Wounds of Strip-Mining **34**
Ralph Branson reports on a USDA and industry project in Caribou National Forest. The five-year study indicates which plants do best on phosphate-mined areas.

Golf Course Irrigates With 'Used' Water **38**
Panther Valley Country Club of Allamuch, N.J., uses water from the community sanitary sewage treatment plant to overcome a water supply deficiency.

Young Man in a Hurry **42**
Clarke Fenimore is proof that even in the space and computer age, you can still start a business on that proverbial shoestring.

Regular Features

Editorial: *Why You Should Get Hip to Young People* 7
The National Greenscape ..... 10 and 12
Meeting Dates 17
Letters to the Editor 52
Insect Report 52
Industry People on the Move 55
New Products 46-49
Trimmings 58
Index to Advertisers 59
Classifieds 60

The Cover

You can't recognize the uniqueness of the cover picture unless you're familiar with turf care in the area of Houston's Intercontinental airport. The picture was taken during the four- to eight-week period that crews have to *get ready* for grass. It grows the rest of the year. But that doesn't mean no mowing, as you can see. The boulevard approach to the Houston airport is being cut to a half-inch. It will be swept, then fertilized and seeded in some areas. Drainage ditches are getting pre-emergence herbicides. You will find about every kind of vegetation care going on at an airport, such as Houston Intercontinental and Chicago's O'Hare Field. The story begins on page 18.

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Turf Establishment Hints

Conwed® Products Challenge The Elements

Establish turf over broad areas quickly with Conwed® HYDRO MULCH. Forms a tough continuous mat that resists erosion, absorbs and retains moisture for fast germination.

Conwed Hydro Mulch also protects seeds from temperature extremes. Clean weed-free wood mulch mixes with water, seed and fertilizer for quick, economical application with any hydraulic mulching equipment. Green color enables constant coverage metering.

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Turf Establishment Blanket unrolls and is stapled over prepared seeded areas protecting the surface and seed from wind and water erosion. 50" x 200' rolls weighing just 21 pounds cut installation time.

What About Those Critical Spots? CONWED EROSION CONTROL NETTING is the solution. This strong, lightweight plastic netting quickly unrolls and staples over seeded and mulched or sodded areas where erosion will most likely take its toll.

Roll widths of 7½', 12' and 15' let you choose the most efficient size for steep banks, side hills, ditches . . . wherever extra protection is needed. And Conwed Erosion Control Netting gradually disintegrates, eliminating pick-up problems.

Roadside? Golf Course? Park? Industrial or residential area? We'll help with your critical turf establishment needs. Write Conwed Corporation, 332 Minnesota Street, St. Paul, Minnesota 55101.

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The Dow Chemical Company, Agricultural Department, Midland, Michigan 48640

Dursban insecticide gets you more bugs for your buck.

That means you'll not only wipe out chinch bugs and sod webworms, but more! You'll find a little Dursban® insecticide goes a long, long way. And Dursban won't leach, has excellent residual activity, even though it's degradable. It's safe, too–for all common turf grasses. Keep the holes out of your turf *and* out of your budget. Tell your contract applicator you want Dursban insecticide . . . the unsurvivable one.

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Why You Should Get Hip to Young People

JUST WHAT IS your responsibility, as a businessman, to young people?

It is, though too briefly stated, to convince them your business is worthwhile. As an occupation. As a producer of a beneficial product or service. Otherwise, *they will do their own thing.* And their own thing may be in competition or in opposition to what you are doing.

We're getting around to asking: Do your public relations efforts include activities uniquely directed to young people?

These efforts should view young people from three premises: that they will become your customers; your employees; or will hold positions in the future that will affect the conduct of your business.

Involvement is the key word to getting better understanding of what you do, why you do it, and what the end results of your business efforts are.

Golf superintendent associations sponsor scholarships. Indiana Farm Bureau Cooperative Association, as a part of its "Safety Side of Pesticides" campaign, developed an essay contest for elementary and high school students. Cleveland's forestry department works with Boy and Girl Scouts of America and other youth groups who have conservation requirements. (A tree-planting project last spring brought out 1,500 young people.)

What about a young people's tour of your business? A tree- or grass-growing contest? A plant identification contest? Most youth groups have a community service requirement. How about a cemetery spruce-up campaign for Memorial Day? Many businesses cooperate with area vocational schools, offering employment to satisfy the curriculum's on-the-job training requirements.

You can think of a dozen more ways to involve young people if you will just take time to give it some thought. No time? Then how about getting a young person to give it some thought?

You in the industries this magazine serves have an unprecedented opportunity to favorably influence young people toward your profession. The "now words" are ecology and environment. These are outdoor things. This is your bailiwick. Author Odom Fanning in his new book, "Opportunities in Environmental Careers," (See The National Greenscape, pages 10 and 12 for publisher's address) says environmental jobs will double by 1980.

You have an inspired generation from which to pick your future employees. They seek with a fervor a world that's a healthier, more beautiful, more enjoyable place to live. Aren't the aims of your business efforts in line with that goal? Then take steps to tell them so.

Your industry is tailored to the younger generation. It's vigorous, rugged, challenging, creative. It requires the hardiness and enthusiasm of the young. The constant need for improvisation and innovation is worthy and welcomed exercise for the young, inquisitive mind.

Your industry is in excellent position to correct a situation that may be one of the strongest contributors to young people's disenchantment with business. They are educated to be individualists, then find themselves in a business world of conformity.

Throughout a young person's formal education, he is taught to think for himself, plow new ground, sow new seeds. Educators constantly boast of how much more youngsters are learning these days and how much earlier they are learning compared with older generations. But with degree in hand, they've discovered it is the old military game of "hurry up and wait" and "conform."

With heads bursting with principles, theories and enthusiasm, they're then de-energized by job classifications, union work quotas, pay categories, seniority rights, standard operating procedure, and, in some instances, just plain age discrimination.

Your industry incorporates so many work description variables that you have the chance to better your competitive position for labor by offering to shape the job to the man, rather than forcing the man to shape to the job.

It is interesting to speculate. If industry did as much to cultivate young people's energies and talents as it does to get their spendable income, would there be a segment of the younger generation shouting for the destruction of The Establishment?

Gene Ingalsbe

If beautiful, weedless turf is a status symbol...so is BANVEL.®

It follows because Banvel is an elite product, a top quality product, an economical product (9¢/1000 sq. ft.). The product you can count on to do the important job of eliminating the commonest and toughest broadleaf weeds in a broad range of tolerant turf species.

Banvel 4-S, for instance. Developed specifically to kill "2,4-D tolerant" weeds like knotweed, chickweed, white clover, red sorrel, carpetweed, etc. The weeds that seem to survive other control methods . . . even rooting out by hand!

How does Banvel 4-S do it? *Translocation.* Banvel uses two avenues of attack; through the leaves and through the roots. By each avenue it then travels *throughout* the weed, no matter how deep-rooted, because it uses the weeds' circulating fluid systems to move into every living cell.

Although Banvel also kills many of the same broadleafs as 2,4-D, there are some against which it is not as effective. Banvel + 2,4-D, a completely compatible and water soluble Velsicol combination, provides broad spectrum control of this long list of turf-destroying weeds:

Dandelion, plantains, curly dock, chickweeds (common mouse-ear and perennial or stitchwort), dog fennel, knotweed, sheep sorrel, clover, knawel, chicory, henbit, ragweed, pigweed, burdock, poison oak, poison ivy, ground ivy (creeping charlie), wild garlic, wild onion, English daisy, spurge, purslane, pepperweed, lawn burweed, hawkweed, spurry and carpetweed.

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CHLORDANE . . . AMERICA'S LEADING TURF INSECTICIDE FOR BUGS WITH BAD EATING HABITS

Soil insecticides come and go but Chlordane goes on forever. The reasons are clear-cut. Chlordane kills most common insect pests of turf; also many harmful or annoying insects that live on the surface: white grubs, Japanese beetle larvae, mole crickets, wireworms, ticks, chiggers, cutworms, ants, mosquitoes, sod webworms (lawn moths), earwigs and many others.

Although Chlordane has long-lasting action, *it does not magnify biologically*. Residues have seldom been detected in foods, water, fish, or wildlife. When detected, they have been insignificant.

Chlordane can be applied with standard equipment, in either liquid or dry form. Exact rates and directions for application appear on package labels.

OTHER VELSICOL TURF CHEMICALS AVAILABLE:

Bandane®	pre-emergence crabgrass control, 15% granules.
2-1	liquid or dry fungicide.
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Thiram-PMA	broad-spectrum wettable powder fungicide combination.
Foamwet™	spray adjuvant.

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FOAMWET™ Air-Emulsion Spray System
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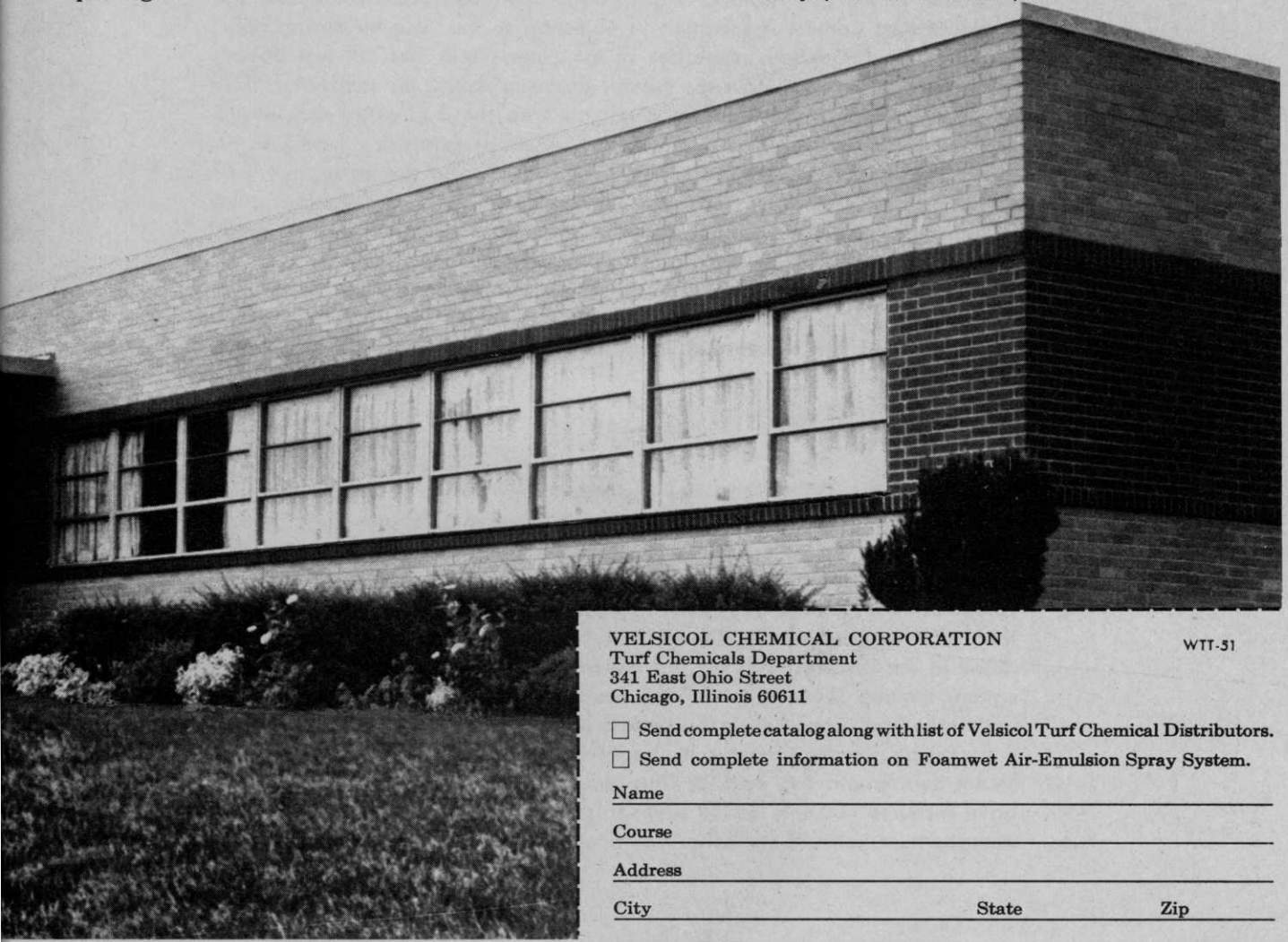

VELSICOL CHEMICAL CORPORATION
Turf Chemicals Department
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Chicago, Illinois 60611

WTT-51

☐ Send complete catalog along with list of Velsicol Turf Chemical Distributors.

☐ Send complete information on Foamwet Air-Emulsion Spray System.

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the national GREENSCAPE

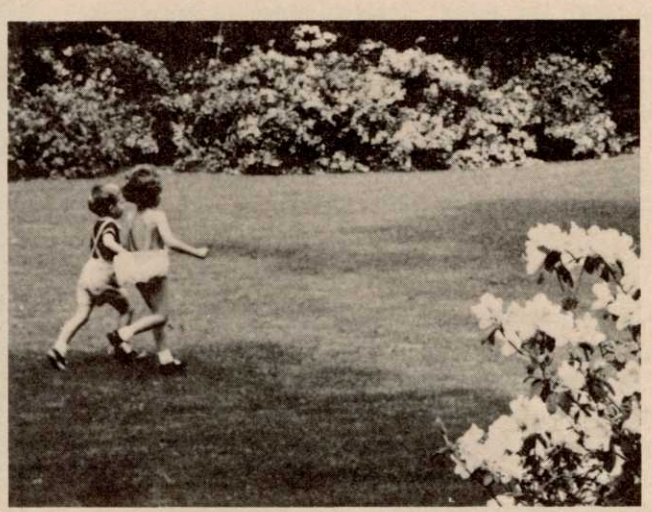
GENERAL SUPPORT from a wide range of interests is emerging from testimony concerning the two major pesticide bills at congressional committee hearings. The bills are S. 745 and H.R. 4152. But spokesmen from industry, professional associations, and some federal agencies state again and again that the benefit/risk ratio regarding human health and welfare should be the determining factor for any action taken. Under Secretary J. Phil Campbell said USDA "strongly endorses" H.R. 4152, but urged careful attention to interpretation. "Primary consideration," he said, "should be given to the welfare and needs of people when weighing the public interest benefits and risks of using any given pesticide or in cancelling its use. To put the deleterious effects of pesticides on a few species of esthetically desirable birds ahead of the needs of people would be a perversion of human values." Donald Lerch, Jr., speaking for the United States Chamber of Commerce, said "a pesticide should not be banned unless its possible harmful effects on man and the environment are greater than its unique contributions to the improved production of needed food and fiber, to the improved health and comfort of people, and to improvements in our natural environment." The Chamber joined the National Agricultural Chemicals Association and the National Pest Control Association in objecting to the "use by permit only" classification for certain pesticides in the Senate bill. The bill just doesn't spell out clear enough how the permit program would be conducted, they say. Not enough information is given on who the approving consultants would be, what their qualifications are, or what pesticides would be in this category. Further, spokesmen said the execution of the program would be cumbersome to the extent of being unworkable. The Chamber gave support to NACA's alternative to subdivide the "for restricted use only" category into: (a) Those (pesticides) which may be applied only by a licensed or certified applicator because of acute toxicity considerations, and (b) Those which may be subjected to other regulatory restrictions because of a potential for substantial environmental damage.

AMERICAN ASSOCIATION OF NURSERYMEN has expressed support of H.R. 4152 "with certain modifications." These include: (1) Establishing a review committee to issue stop-sale orders on pesticides, rather than giving the power to one person, EPA head William Ruckelshaus; (2) That criteria are lacking for categorizing pesticides into general, restricted and permit-only classes and that such criteria be developed in public hearings and be specified in detail in the law; (3) That permits issued should not specify time of application, leaving the decision of the exact time of application to the user, within the limits specified in the permit; (4) That a farmer who has obtained a permit be allowed to supervise application of pesticides on his own crops by his own employees; and (5) That for permit-only pesticides, users would have recourse through law to cover losses resulting from mistakes by pest management consultants (who would advise and issue the permits).

Why it pays to specify

SEVIN®

carbaryl insecticide



for better

SEVIN is safer to use than many other insecticides because of its relatively low toxicity to humans, animals and fish. People can use the grounds soon after application. Drift is less of a problem with SEVIN insecticide and residues do not build up in the soil or streams.

long-lasting

SEVIN provides long-lasting insect control with a minimum number of applications. It works well in cool weather and in heat or bright sun. SEVIN controls 160 different insects, including major pests of lawns, trees, shrubs, flowers, fruits and vegetables. On food plants it can be used close to harvest.

insect control

SEVIN insecticide is ideal for use by the amateur as well as the expert gardener. You can recommend it widely. It pays to stock and sell SEVIN, the safer, better insecticide. Union Carbide Agricultural Products, P.O. Box 1906, Salinas, California 93901.

UNION CARBIDE

THE DISCOVERY COMPANY

SEVIN is the registered trade mark of Union Carbide Corporation for carbaryl insecticide.

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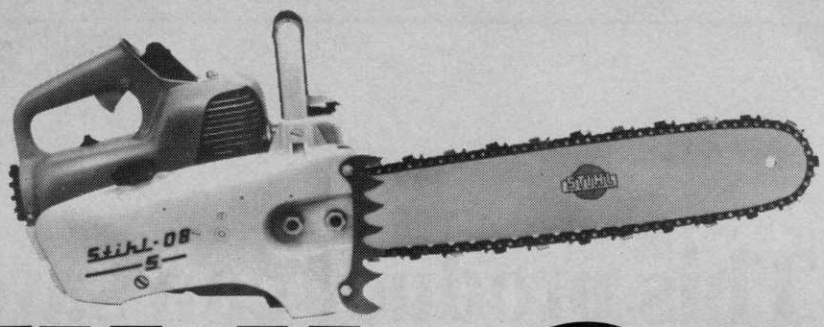
the national GREENSCAPE

ENVIRONMENTAL JOBS will double by 1980, says a new book. Odom Fanning, a Washington science writer, predicts environmental jobs will increase from 655,990 in 1970 to 1,181,000 by 1980. His book, "Opportunities in Environmental Careers," includes a survey and analysis of five areas of environmental management: ecology, earth sciences, resources and recreation, environmental design including architecture, and environmental protection including public health and pollution control. Published by Vocational Guidance Manuals, the book is $5.95 available at book stores or by writing VGM, 235 East Forty-fifth St., New York, N.Y. 10017.

AIR POLLUTION costs the nation more than $500 million each year in damage to crops, forests and ornamental plants, estimates Dr. Axel L. Andersen, Michigan State University plant pathologist. Damage comes from primary pollutants that are directly toxic to plants and secondary pollutants formed by photochemical reactions between sunlight and chemicals released into the air. Major sources of primary pollutants, sulfur dioxide and hydrogen fluoride, are industrial complexes and electrical generating plants that use coal or oil for fuel, he said. The photochemical pollutants that do the worst damage are ozone and peroxyacetyl nitrate. Sources of the chemicals that react with sunlight to produce these oxidants, Dr. Andersen says, include: car and truck exhausts, factories that burn natural gas, fuel oil and coal; and industrial complexes that make nitric acid, sulfuric acid (chamber process only), paint, roofing, rubber, soap and some nylon products.

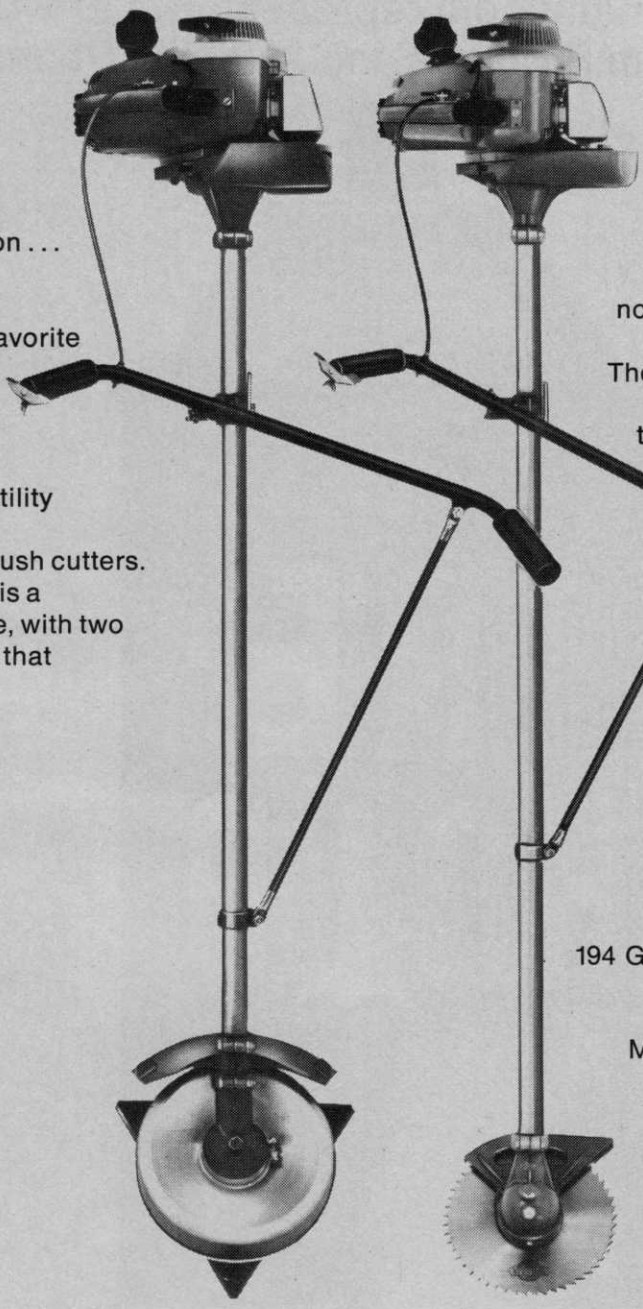
THE SPRUCE BUDWORM, Ontario's most serious insect pest in 1970, is expected to cause even more widespread damage to balsam and spruce in 1971, warns the Canadian Forestry Service. Predictions are based upon a recent survey of hatched egg clusters. The infestation affects some 1.5 million acres in the Ottawa Valley and 5.3 million acres in northeastern Ontario.

A CARRIER SAFETY REGULATIONS REVISION in the Motor Carrier Safety Regulations has been delayed by the American Association of Nurserymen and 14 other agriculturally oriented associations. The revision would have eliminated the agricultural exemption from the regulations for drivers of trucks under 10,000 pounds in interstate commerce. It was scheduled to go into effect Jan. 1, but has been postponed until June 30 to allow protest testimony. By eliminating the agricultural exemption, every farmer who drives a truck would have to comply with federal safety regulations which state: A driver must be 21 years old, trained and experienced, have no serious violation record during the past three years, passed a road test on the use of a truck, have successfully completed a written examination on federal safety regulations, and successfully completed a physical examination which must be repeated every two years.



STIHL 08 S

Cut Weeds, Brush and Trees..3 Ways..Better!



The trio pictured here all have one thing in common . . . the famous STIHL-08S powerhead.
Consistently one of the favorite saws of farmers, orchard and nursery men, utility crews and pulpwood cutters — the STIHL-08S has also proven its versatility as the power unit behind our high performance brush cutters.
The STIHL Brush Cutter is a gasoline powered scythe, with two interchangeable blades, that quickly and effortlessly lets you clear large areas of brush, weeds and other growth. No bending . . . no chopping . . . and no muscular fatigue!
The *circular saw blade* is perfect for cutting underbrush and young trees (up to 6" in diameter) and the *rotating knife* is the greatest for clearing matted shrubbery, weeds, tall grass and even seaweed.
A trio, which in balance, design and performance are unmatched!

STIHL®

STIHL American, Inc.

194 Greenwood Avenue, Midland Park,
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7364 Lee Industrial Boulevard,
Mableton (Atlanta), Georgia 30059,
Code 404-941-1730
23962 Clawiter Road,
Hayward California 94541,
Code 415-785-9100

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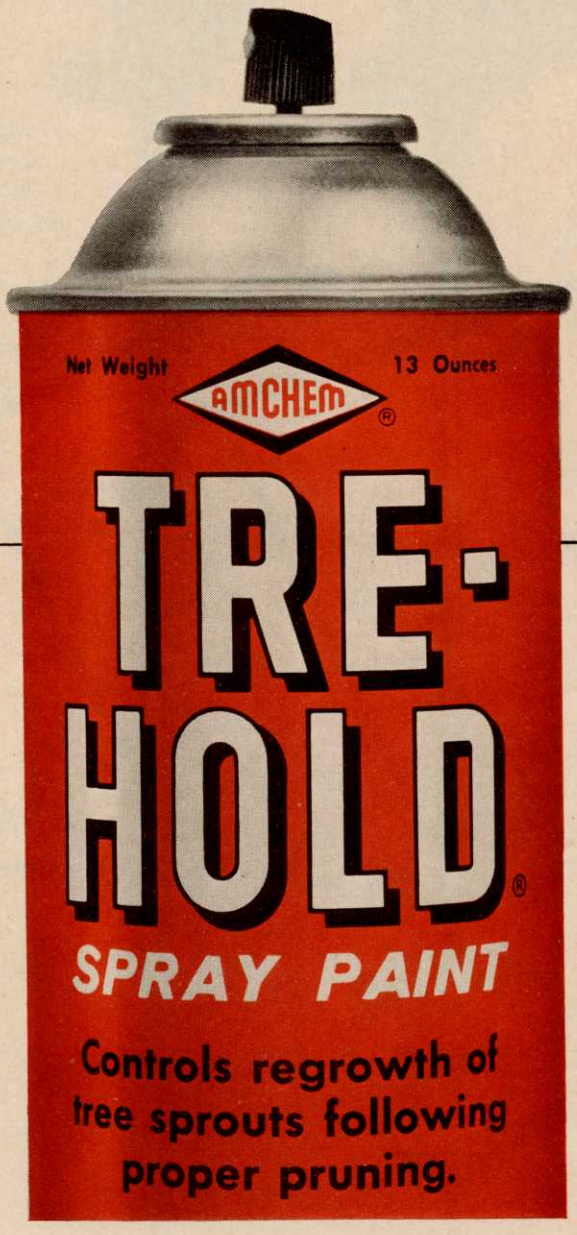
This product can save up to $200,000 a year *and we can prove it.*

Ask your Amchem representative or write Amchem Products, Inc., Ambler, Penna.



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Fargo Multi-Sprayer Kills Roadside Weeds . . . Minimizes Chemical Drift

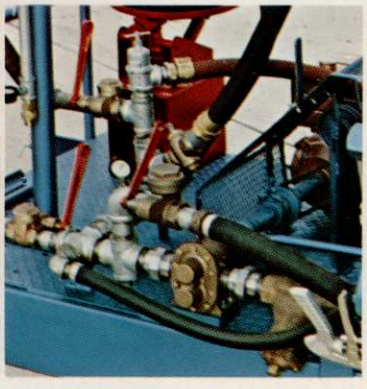
Here's the ideal unit for control of weeds along roads and highways and in other public areas—the Fargo Multi-Sprayer. It's a conventional sprayer, using a single 500-gallon tank. It mixes and applies invert emulsions for drift control and also applies conventional sprays.

The basic unit is a skid-mounted heavy gauge aluminum tank, with pump, engine, agitator drive system, outlets and controls. Additional equipment, which may be added as needed, includes: Turret gun, seat and guard rail . . . Side nozzle boom . . . Rear boom . . . Trailer . . . Fifty feet of 1-inch hose reel, and gun, for patch spraying . . . Front boom for side spraying . . . Ten feet of suction hose and strainer . . . Barrel rack.

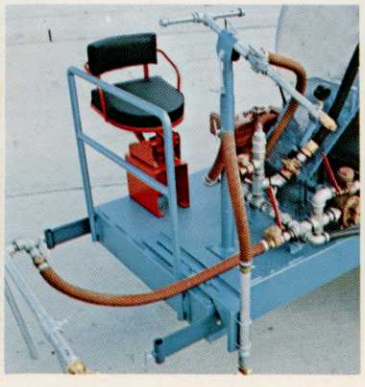
The versatile Fargo Multi-Sprayer utilizes a mechanical agitator with sweep reel for thick chemicals. A jet-pipe disperser speeds up thickening of invert emulsions.

For patch spraying, the Fargo Multi-Sprayer gives operator "spot control" and minimizes chemical drift to protect deciduous trees and other foliage or plant life.

Tank is 45½" in diameter, 6' long, with splash plate, 4½" fill opening, large manhole for easy cleaning, sump trap to provide continued flow to pump regardless of water level. Barrel rack, shown here, is optional.



All controls in easy reach of operator. Large face pressure gauge, range from 0 to 160 pounds, provides absolute accuracy. A 1¼" regulating valve handles full flow from supply line.

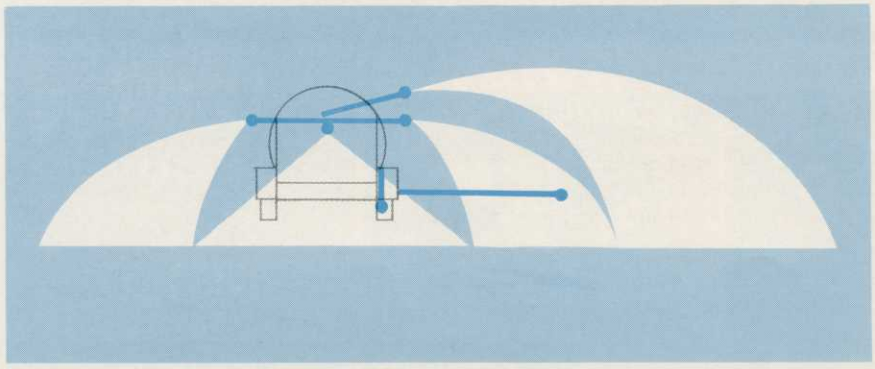


Adjustable seat, and guard rail, provides operator with maximum comfort and safety at all times. Illustrated here is the turret gun, which —like all other Fargo Multi-Sprayer applicators—is at the operator's finger tips.

For patch spraying, fifty feet of 1-inch hose, hose reel and gun, are optional equipment.

Flexible rear turret gun allows operator to guide spray pattern assuring complete coverage.

The Fargo Multi-Sprayer is ideal for weed control in the median between four-lane highways. Rear boom provides fifty feet of coverage down the center.



Spray pattern with use of rear boom and turret gun.

Dealer Inquiries Invited — Write

FARGO FOUNDRY STEEL & MANUFACTURING COMPANY
92 N. P. AVENUE, FARGO, NORTH DAKOTA

SPECIFICATIONS

TANK, ENGINE, PUMP

500 gallon capacity 45½" diameter x 6' heavy gauge aluminum tank with a splash plate, 4½" fill opening, dust proof fill cap and strainer, quick-opening manhole for easy cleaning, large sump trap that provides continued flow to pump regardless of water level. A mechanical agitator with sweep reel belt drive from pump with belt tightener, manually operated clutch to disengage mechanical agitator, with a jet pipe disperser for invert emulsion formulations, with shut-off valve. Pump powered by direct-drive gear reduction seven horsepower Briggs and Stratton engine with recoil starter. Pump is a 1½" Oberdorfer bronze gear pump with capacities of twenty gallons per minute at fifty pounds pressure at five hundred R.P.M., with 1½" brass line strainer with stainless steel double screen 16 mesh. 1¼" regulating valve with stainless steel cone handles full flow from supply line; positive lock nut holds adjusting screw firmly in place. Large-face pressure gauge range reading 0-160 pounds demands the ultimate in accuracy and stamina. Tank, engine, pump, strainer, regulator and piping is mounted on skid frame, electrically welded and has a heavy engine and pump base plate, special openings in piping unit for attachment accessories.

TURRET GUN, STAND, SEAT AND GUARD RAIL

Uses off-center nozzle for varying the outer edge of the treated strip. Mounted on a pipe base allowing height adjustment as well as allowing the unit to pivot. Variations in wind direction and swath width are met by moving gun nozzle up or down, forward or back and tilt of spray pattern to give maximum coverage along rights-of-way. Padded seat cushion with all steel frame and hydraulic shock absorber featuring selective weight adjustment. Heavy duty guard rail provides additional safety.

CORNER MOUNTED NOZZLE

For general purpose spraying off one side of unit from the roadside shoulder and in conjunction with turret gun. Quick shut-off valve within easy reach of operator. Nozzle support bracket can be adjusted for height and extension from skid of up to 20".

REAR BOOM

Designed for wide rights-of-way. Adjustable height and end nozzles. Quick opening and closing valve within easy reach of operator.

FRONT BUMPER BOOM

Rugged, adjustable boom frame quickly attaches to all bumpers. Boom features 10 nozzles with 20" spacing. Spray pattern extends approximately 17 feet. Quick opening and closing valve within reach of operator seat. Boom has automatic uncoupler and dihedral in action should boom strike an object.

HAND GUN & HOSE

The gun is Spraying System 43-L and 50' of 1" special acid-resisting hose and shut-off valve.

REEL

Hannay heavy duty reel with large internal parts to provide unrestricted flow of liquid. Direct hand crank rewind.

SUCTION HOSE WITH STRAINER

1½" x 10' suction hose for pumping water, chemicals and oils to tank.

TRAILER

Heavy-duty two wheel trailer with electric brakes, ball hitch, jack, safety chain, brake light, tail light and signal lights. Wheels are equipped with 6-ply 700 x 15" tires.

BARREL RACK

For chemical cans, or two 30 gallon drums. Used only with trailer models.

meeting dates

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Florida Nurserymen and Growers Association annual convention, Deauville Hotel in Miami Beach. May 13-15.

Southern California Turfgrass Institute at California Polytechnic Institute, Pomona. May 18-19.

Rutgers University Turfgrass Research Field Day at 10 a.m. at New Brunswick, N.J. June 8.

Western Chapter of the International Shade Tree Conference annual convention, Del Webb Townhouse, 9th & Market Sts., San Francisco. June 20-23.

American Association of Landscape Architects annual meeting, Portland, Ore. June 20-24.

Grassland '71 fourth annual field day. Eugene, Ore., Municipal Airport. June 23-27.

California Landscape Contractors Association at King's Castle, Lake Tahoe. June 23-27.

Michigan State University Sod Production Field Day at East Lansing, June 29.

Shade Tree Meeting at the Ohio Agricultural Research and Development Center at Wooster. July 7.

American Association of Nurserymen convention, Statler Hilton Hotel, Dallas, Tex. July 17-21.

1971 Midwest Nursery and Landscape Exposition at D. Hill Nursery, Dundee, Ill. July 25-27.

United States Department of Agriculture Turfgrass Field Day, Plant Industry Station, Beltsville, Md., Aug. 4.

47th International Shade Tree Conference at the Queen Elizabeth Hilton Hotel in Montreal, Quebec, Canada. Aug. 8-12.

American Society of Agronomy, Crop Science Society of America and Soil Science Society of America concurrent meetings in New York City, Aug. 15-20.

Penn State Turfgrass Field Day at the Joseph Valentine Turfgrass Research Center, University Park, Pa. Aug. 25-26.

Michigan State Turfgrass Field Day at the Crop Science Field Laboratory in East Lansing. Sept. 9.

Alabama-Northwest Florida annual turfgrass short course in cooperation with Auburn University, Auburn, Ala. Sept. 9-10.

Florida Turf-Grass Management Conference, Pier 66, Ft. Lauderdale. Sept. 19-22.

Midwest Regional Turf Foundation field day, Purdue University, Lafayette, Ind. Sept. 27.

30th Annual Short Course for Roadside Development, Columbus, Ohio. Oct. 4-8.

Society of Municipal Arborists seventh annual meeting at the Empress Motel, Asbury Park, N.J. Oct. 6-8.

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brush eater!

Team up with **WAYNE BRUSH CHIPPERS** . . . They can solve your brush disposal problems with high speed and economy . . . economy provided by exclusive 6 sided bed knife adding 50% more life than a conventional 4 sided knife. Multiple safety features assure maximum protection for your operating personnel.

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SALES, PARTS AND SERVICE WORLD WIDE

In Vegetation Maintenance

TALE OF TWO CITIES' AIRPORTS

VISUALIZE THE TASK of mowing, spraying and fertilizing the grid iron turf with the Super Bowl in prograss.

Now, substitute screaming jetplanes for the yelling linemen. Set the crowd in motion, scurrying from one section of the stadium to another.

Perhaps you can now conceive of the arena in which the grounds crews work at Chicago's O'Hare Field and Houston's Intercontinental Airport.

The coaches are Ray Humbard at O'Hare and L. Pat Collins at Houston. Easily, they can match grid coaches, manpower and equipment frustrations and "front office" idiosyncrasies. There is one glaring difference in the game outcome. Humbard and Collins have no choice but to win — and continue to win. Otherwise, lots of people could get hurt, or killed.

That's why, says Humbard, "our primary interest is safety, and at Chicago we have one of the biggest and safest airports in the world."

Both men are responsible for more than vegetation. They must see that runways are kept clean and are well marked and to varying degrees they are responsible for handling the trash from the maze of airport buildings and grounds. But the care and control of vegetation can be more critical in providing a safe place for planes to take off and land. Aesthetic considerations, while secondary, can become extremely sensitive.

12 Tips on Management

Humbard and Collins probably have faced all — and solved most — of the problems airport grounds managers can experience. From discussions of their year-round operations, this advice emerges:

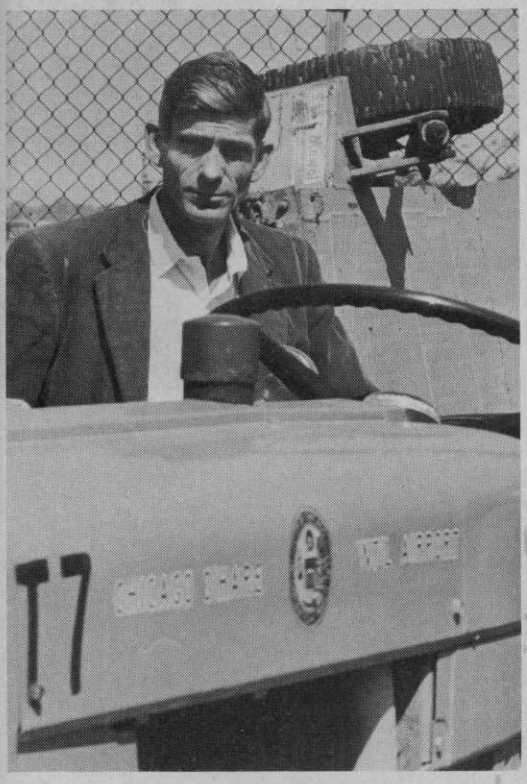
- Pay particular attention to employee morale. Hiring a trained man is practically impossible, therefore it is essential that once you've trained a new employee you make every effort to keep him — and keep him happy.

"I consider my staff as one big family," said Collins. And employees respond: "He's the kind of man you *want* to work for. You just don't find a problem he can't help you with."

- Use inclement weather to add depth and breadth to employee training. Formalize training even to the extent of using such aids as lectures, films and examinations.
- Provide the employee with the opportunity to advance within grade, recognizing him for his achievement with more pay. Have certain employees groomed for supervisory roles.
- Set up a clearly understood chain of command. Even wtih superior radio communications, times will occur when staff members must get work moving or make decisions for the superintendent.
- Determine which turf areas are sensitive, aesthetically or otherwise, from the viewpoint of the public (or the boss), and plan grooming accordingly.
- Anticipate problems, and plan far ahead. Order materials from three to six weeks before expected use date. Budget a year ahead, and carefully justify new expenditures.
- Get to know those persons who handle and approve your requests for materials. In an emergency, the sluggish administrative gears may be greased with a phone call. When your back is really to the wall, the door may be opened to hand-carry the request.
- Try a variety of products. They may not work equally well for your particular problem. "I've used herbicides where the results were so disappointing I could have done a better job spraying diesel oil," said Humbard.

"Every herbicide is best suited for something," added Collins. "Know what that use is."

- Experiment to determine which materials work best for you.



Airfield and grounds superintendent Ray Humbard at Chicago.

●

O'HARE FIELD

Humbard is putting out a five-acre plot this year combining weed killer with grass growth retardant. Collins hopes to get some crownvetch established along drainage ditchbanks, believing the legume will cut maintenance costs up to 70% once it is established.

● Though products and materials are usually purchased by bid, careful attention to writing specifications can get you the brand of equipment or material you want.

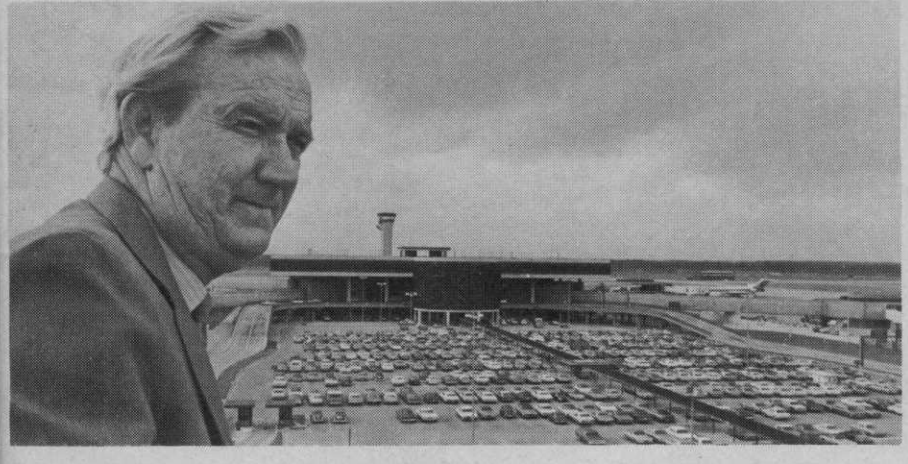
● Keep in touch with related city vegetation care programs, watching for the opportunity to do a favor or get one done. Humbard is getting landfill material from the city forestry department that's tickled pink to find a disposal site for trees killed by Dutch Elm Disease.

Collins has an active "farming program" on portions of 1,750 acres of airfield grounds. He plants coastal bermudagrass and prairie hay, which is cut, baled, and sold to the city zoo.

● Watch for the opportunity to take advantage of federal assistance programs. Collins hopes to get 50 men this summer through the federal Manpower Development Training program. Though the men, under 21, aren't trained to handle power equipment, Collins will provide rakes and axes and use them to clear brush, or for similar jobs that can be done with hand labor. The federal government has indicated it may share the wage costs.

●

HOUSTON INTERCONTINENTAL



Airports Alike and Different

Houstin and O'Hare airports exhibit both striking similarities and contrasts in description and operations. Both airports cover in excess of 7,000 acres. O'Hare, long established but constantly expanding, has 450 acres in turf. Houston, just opened in 1969, has a much bigger percentage of land undeveloped. Collins is pursuing a goal of maintaining 619 acres to "golf course perfection." An additional 575 acres gets reduced fertilizer and herbicide treatment; another 1,760 acres is maintained only at widths of 200 to 300 feet from roadway shoulders.

Geographic location dictates difference in vegetation, equipment, manpower and materials. O'Hare is a "bluegrass" airport; Houston is a bermudagrass terminal. O'Hare has six to eight men who mow the entime acreage three or four times a year, then stand ready to remove snow from runways the rest of the year. Houston, with a total of 42 employees, mows year around except for a few weeks in January and February.

O'Hare spends about $20,000 for herbicides and $20,000 for turf equipment and supplies; Houston's annual budget is about $50,000 for fertilizers and $35,000 for herbicides. Principal differences in expenditures are climate and growing season and that O'Hare's program is one of maintaining and rebuilding, whereas Houston's is building turf on areas that were once "neck high" in weeds.

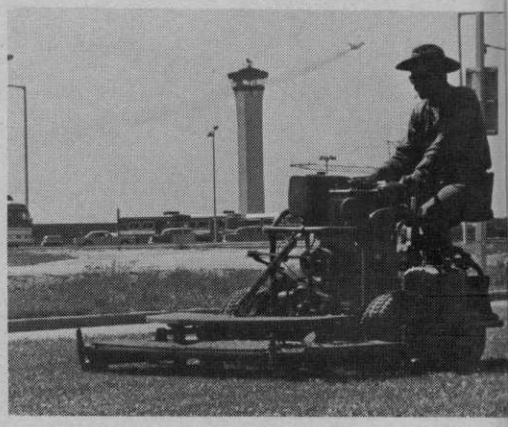
Field drainage, public use areas, weed control around landing and takeoff installations, and perimeter fence weed control are common headaches.

Both airports are turning to herbicides to keep drainage ditches unplugged from excessive weed growth. Humbard said the network of ditches, costing millions to build, can deteriorate to the point of needing redredging. Such a task might cost close to $90,000, when the ditches, he estimates, could be effectively cleaned with herbicides at less than $5,000. A program begun in 1969 called for using Dow General Weed Killer and Tordon 10K pellets.

Houston has 18 miles of drainage ditches, some situated between the 105-acre, closely manicured boulevard approach to the airport and others through rugged terrain of less developed sections.

For herbicide application, "we control drift with Foamwet," said Collins. "We found that with foam we know we're getting coverage because we can see it. We never use over 60 psi and we have a nozzle for each type of application. It's extremely important to have the head shaped properly for the ditch bank to get uniform coverage."

For Johnsongrass and Dallisgrass control in turf, Collins uses Foamicide 1300, containing MSMA. Rada-



Airport turf care requires nearly every size, style and type of mowing vehicle, from the 25-ft. rotaries at Chicago (page 18), the 7-gang reels (above) and big flails (lower right) at Houston to the small riding mowers (upper right) and push mowers (lower left) at Chicago.

Cuts twice as fast as most lawn tractors, hugs the ground for hillside safety

NATIONAL 68-inch Triplex

Mows a 68-inch swath at speeds up to 4 miles per hour, a half acre in 15 minutes.

It's a turf-professional type mower, with three powered, free-floating reels that follow ground contour. It shears grass cleanly; doesn't leave unsightly "tip burn" as rotaries often do.

Reduces trimming time because the reels reach out over curbs, up to obstructions and in other hard-to-cut places.

Built to last—with Timken bearings, automotive-type transmission and a lip on the cutter bar to take years of wear.

Do your lawn job in about half the time and do it better with the all-mower mower, the National Triplex.

Other models from 25 to 84-inch cut.

Write for information.

NATIONAL MOWER COMPANY

660 Raymond Avenue, St. Paul, Minnesota 55114
Phone: 612/646-4079

Houston uses a road grader to improve drainage ditches.

pon is used on cattails. For soil sterilization around lights, markers, fences and buildings, Foamicide 1000 is used, containing bromacil, diuron and MSMA.

But the storage area also includes DSMA, Pramitol, Karmex, Ansul 529, Monobor-Chlorate and TH De-Pester.

Vegetation for Safety's Sake

Aside from turf aesthetics, weed control objectives are dictated by safety standards. High weeds can obstruct visibility of landing lights, interfere with radar, obstruct drainage, create fire hazards, and increase mowing frequency and cost.

Solid turf coverage is particularly needed along edges of runways to minimize the dust and debris kicked up by increasingly powerful jet planes. The 747 has necessitated widening runways at O'Hare from 150 to 200 feet, Humbard said. Under full power, he explained, the 747 engines' backblast is so tremendous it shears off the metal runway lights.

Headaches — Public and Construction

"Our greatest problem is the peak construction activity we operate under," said Humbard. "We no more than get something planted before we have to dig it up again. Often this means we must move trees at the wrong time of the year."

Construction, he added, has required the contracting for 40,000 yards of sod for each of the past three years.

"The public itself is a big problem," continued Humbard, because of its misuse of turf areas. "I would guess we pick up 400 tons of cigaret butts a year. Our hang-up in some places is where turf won't grow because of the nicotine content of the soil. We're considering trying artificial turf."

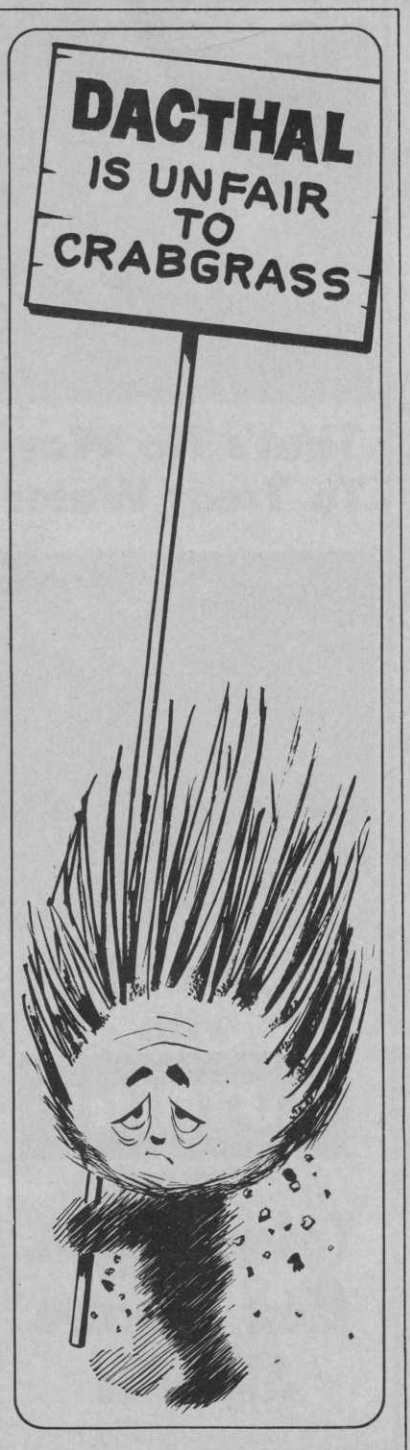
Collins, estimated the cost of picking up trash at Houston at $180 per day.

Building Houston From Ground Up

Collins, a retired air force pilot, former golf course and landscape contractor, and a college-trained business administrator and agronomist, faced a monumental task when Houston Intercontinental was begun "out in the sticks" 22 miles from downtown. However, previous experience in such a large undertaking helped.

At one time he handled much of the landscaping for the NASA complex, employing 67 men and working under contracts totaling as high as $2.3 million. He had been with the Houston parks department, in charge of the botannical garden, before becoming airfield and grounds

Houston and Chicago airports are swept down fore and aft, concrete and turf. The sweeper below is working the boulevard approaches to Houston Intercontinental.



THAT'S FOR DIAMOND SURE!

Unfair? It's deadly! Dacthal® herbicide knocks out crabgrass before it gets started. Spray Dacthal W-75 or spread Dacthal granules before crabgrass comes up. Your worries are over. Dacthal has been widely used for many years on leading golf courses and other fine turf areas. It won't leach or wash out, even with frequent watering. See your local turf chemicals dealer or write to Agricultural Chemicals Division, 300 Union Commerce Bldg. Cleveland, Ohio 44115.

Diamond Shamrock Chemical Company

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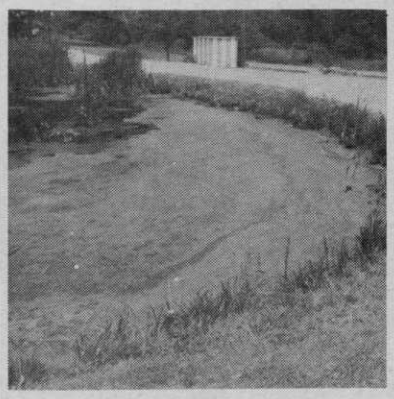

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Pat Collins talks shop with his two supervisors, Lee Hightower, left, and Harry Clifford, center.

superintendent for H.I.A. four years ago.

Collins first tackled those neck high weeds by burning. That was five years ago. A soil test indicated an 8.4 pH.

A program of encouraging what common bermudagrass there was with 13-13-13 "didn't do so well." The successful program that followed to take care of weeds and at the same time establish turf might best be described as the "scorched earth fertilizer policy."

"We applied 1,500 lbs. per acre of fertilizer in a 90-day period," Collins said. "We got tremendous weed control. Then a three-inch rain came at the right time and the grass almost greened up over the weekend."

He began (1969) with 750 lbs/a in March and 500 lbs/a in May of urea 45 and 38 with formaldehyde. In July, limestone with an 8-2-4 base was added even though the soil test didn't show a need for it.

In March of 1970, another 500 lbs/a of 45% urea was applied.

This spring, the program changes a little. The rate is the same. In March, 15-5-10, including 16% sulfur, .8% iron and .5% zinc, went down. Ammonium sulfate, 21-0-0, will be applied in May. Boulevards will again get the 8-2-4 limestone.

Collins is hoping to replace common with 328 hybrid bermudagrass along the slopes. An additional 575 acres gets a once-a-year fall application of 12-24-12.

It is particularly along the 105 acres of boulevard approaches to the airport where Collins wants that golf course perfection. It is mowed at ½-inch with flails and reels until July (a new 10-blade reel can now mow to ⅛-inch). From July to about the third week in September, the height is raised to one inch. Mowing is weekly, with thatching and sweeping done every fifth cut.

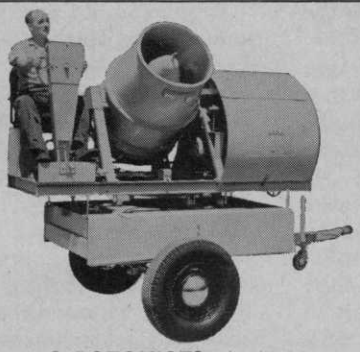
For insect control, Collins applies chemical with fertilizer to control fire ants. Diazinon is used on the pine bark beetle, with spraying done spring, summer and fall.

Employee Training

Though his training is in other fields, whatever he does Collins is "thinking public relations" — better yet, human relations. The obvious result is a generally more pleasant working atmosphere, a staff that takes pride in its work, and one that gives maximum effort.

Collins' training program is therefore multi-functional: to broaden knowledge and skills; increase employee confidence; afford opportunity to advance in salary and responsibility; and create an attitude

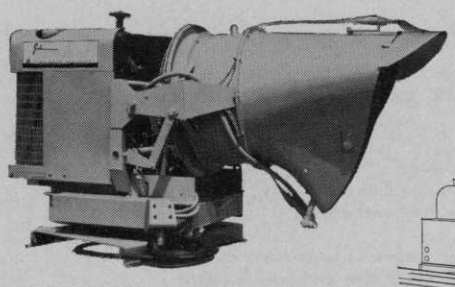
Below are Chicago employees Elba Page, left, tree trimmer and landscaper, and Ralph Arthur , motor truck driver.



MODEL 100G ROTOMIST® shade tree, sanitation, mosquito control, leaf windrowing. 29" fan delivers 28,000 CFM at 100 mph.

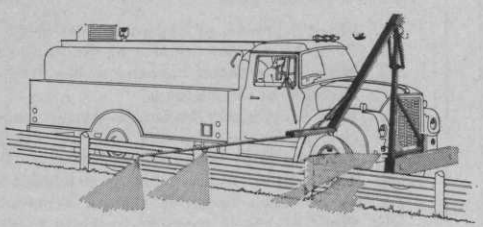
MODEL 303T ROTOMIST biggest performer among mist-type shade tree sprayers. 40" fan, 60,000 CFM air volume.

when it's shrubs or trees,



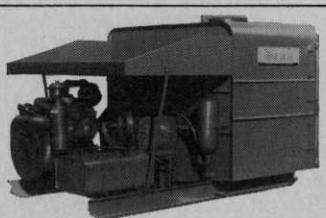
ROTOCAST® specially designed for roadside weed control. Teardrop discharge head provides reach plus close-in coverage.

HIGHWAY BOOM provides a lowcost answer for spraying over guard rails as well as sodded right-of-ways.



TURFKEEPER handles high pressure spraying applications of liquid fertilizer, weed or brush control chemicals. 17-nozzle, 3-section boom, wide flotation tires.

roadside spraying or any other spraying job



SKIDMOUNTED ROYAL heavy-duty high-pressure sprayer models. 25, 35 and 60 GPM @ pressures to 800 PSI. Plus Royalette and Royalier models.

MODEL 1010G SPRAYER designed for golf course operation on a Cushman. 13-nozzle hinged boom, 100-gallon Fiber Glass tank, full-flotation tires.

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John Bean sprayers offer the widest selection, in air-type or high-pressure models, each one is job-designed for maximum efficiency. Send for free product catalogs.

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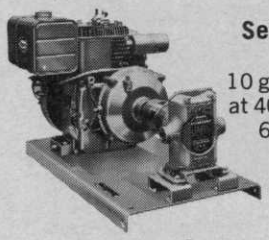
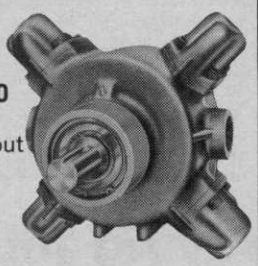
PISTON PUMPS



Series 5200 Big Twin
10 gpm output at 400 psi with 6 hp engine



Series 5400 4-Cylinder
25 gpm output at 600 psi

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Choice of rubber or nylon rollers

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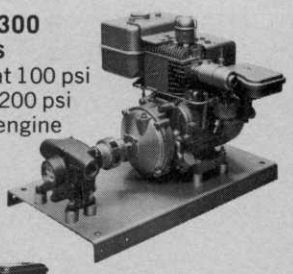
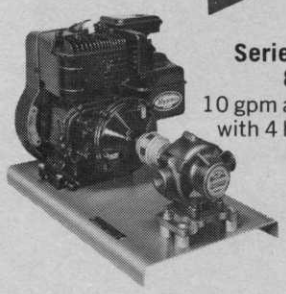
6 gpm at 200 psi
4 hp gas engine





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that will build a good image for the department.

It's not uncommon, he said, that "the training my men get leads to a better paying job somewhere else."

How does the public relations angle in training come about? "If someone stops my man and asks what he's spraying, I want him to know, rather than shrug his shoulders. If he says it's DSMA and is then asked 'what's that?', I want him to know. And I want him to know why he is doing what he is."

Regular employee meetings are devoted to problems, plans, and additional classroom-type instruction. Sometimes, exams are given. Examples of questions asked are in Table I.

Responsibility is delegated to two supervisors, Harry Clifford and Lee Hightower, and four foremen — Jesse Hightower, Tom Anglin, L. C. Douch and Earl Perkins. Job classifications include laborer, semi-skilled, truck driver, mechanic, and three grades of operators.

Collins has plans well in mind for reclaiming more brush land and beautifying existing grounds as Houston Intercontinental Airport grows to accommodate a passenger volume of 8 million by 1975 and 13 million by 1980. And Ray Humbard, though he hasn't the time to verify that planes arrive and depart every 48 seconds at O'Hare, probably is ever pondering what landscaping he must tear up next.

TABLE I — Typical Examination Questions

For truck drivers:

1. What is known as hydraulic over air?
2. Give the present tire size of the Dodge dump truck?
3. What is the water capacity of the Ford water truck?
4. Describe booster brakes.
5. How do you put the Dodge power wagon in four-wheel drive?
6. How many yards of wet sand will the Dodge dump truck hold?
7. Does the Cony wagon have a six- or 12-volt system?
8. What water pressure can be produced from the Ford water truck?
9. Why do you downshift a truck in motion?
10. What license is required by state to drive a vehicle with passengers?

For Mechanics:

1. How does the Simplex grinder work?
2. Do you understand and know how to lap the reel after it's sharpened?
3. What does the bale lift do on the Toro mower?
4. What is a bedknife?
5. How many cutting blades are on the present reel of the Toro mower?
6. Name the two most important systems on the entire Toro Spartan mower.
7. How many hydraulic knobs operate the up and down positions of the reel mowers?
8. How many cylinders does the motor on the Toro tractor have?
9. What kind of brake system does the Toro tractor have?
10. What is the ratio wheel to reel?

For Operators — Grades one, two and three:

1. In what position of the PTO speed shift lever do you engage the 1,000 rpm shaft and the 540 rpm shaft on the Ford 5000?
2. How long is the hose on the Thuron ag sprayer?
3. Can you operate the backhoe?
4. How many cubic yards does the hopper hold on the Rogers sweeper?
5. When using the Astron mower, what two gears are best for mowing?
6. What is Mr. Collins' telephone number?
7. Who is the airport manager? The Director of Aviation?
8. Name some of the fertilizers we use.
9. What is the total acreage we maintain?
10. Do you always read the Tech Book on the tractor or piece of equipment you are operating? (If your answer is No, you better begin after today.

For Foremen:

1. State the difference between mulch and soil additive?
2. What is the chemical difference by application and results of a selective herbicide from a soil sterilant?
3. List the rate per acre of fertilizer applied in March, May and July.
4. What is a balanced fertilizer?
5. What is the difference between seeding, sprigging and sodding?
6. Why do we test soil?
7. What is a surfactant and what is it used for?
8. What kind of fertilizer is used to promote fast growth? To promote root growth?
9. What is DSMA? 328?
10. How many vehicles can you operate yourself and teach others to operate them?

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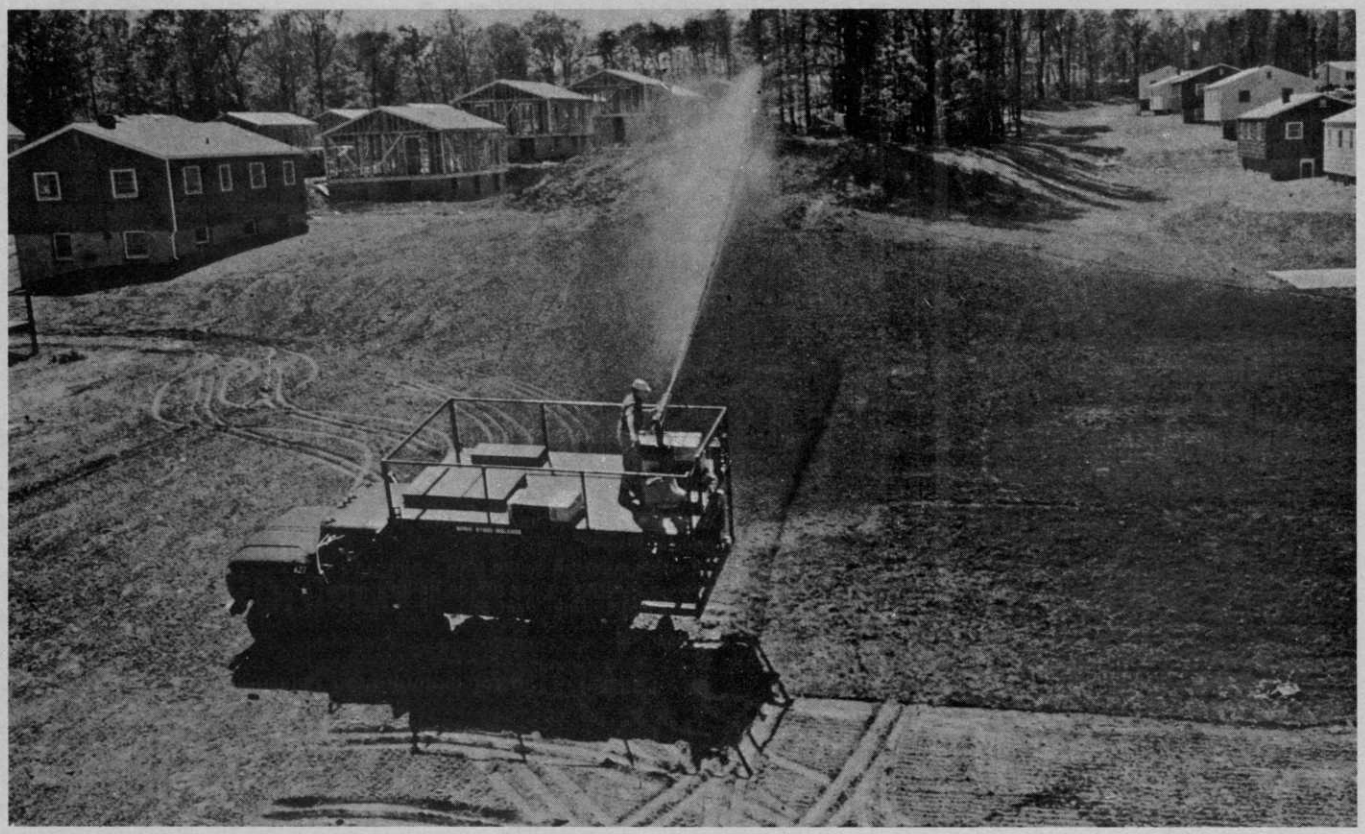

View at forest service nursery of 500-gallon Bowie Hydro-Mulcher with large flotation tires and baffle for controlled mulching of 54″ beds.

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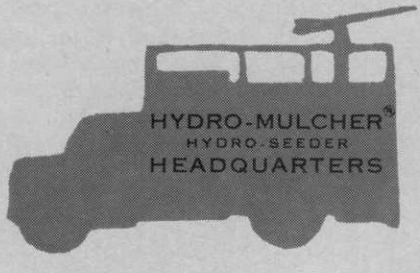

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THE GYPSY MOTH

Nature's Ecology Disrupter

AGAIN IN 1971, gypsy moth caterpillars are expected to cause widespread damage throughout much of the Northeast, and the foliage of oak, birch, basswood, maple, apple and other hardwoods is high on their list of favorites.

Concerted efforts by state and federal authorities, custom applicators and concerned citizens have so far limited the range of this voracious insect to most of New England and New Jersey along with eastern areas of New York and Pennsylvania. It seems likely, however, that it will eventually break out of this confinement. To some extent, in fact, it already has since Somerset County on the Pennsylvania-Maryland line was last year officially declared an infested area. This marks the most westerly reach of the gypsy moth and poses an ominous threat that creeps ever nearer to the 100 million acres of valuable hardwood forests in the Ozark and Appalachian mountain ranges. Widespread defoliation in these areas could very easily lead to alarming losses that would have serious economic effects on timber and timber-related industries.

Last year, gypsy moth caterpillars partially defoliated almost one million acres of trees. This represents an area considerably larger than that encompassed by Rhode Island. In New Jersey alone, 130,000 acres were stripped while almost 370,000 acres in Connecticut were subjected to similar damage. New York's losses were extended over 430,000 acres of leaf canopy.

Obviously, this kind of damage drastically alters our environment and upsets the ecological balance. Dead and dying trees offer songbirds and game insufficient shelter, forcing them to move elsewhere. Snakes —including poisonous species—are driven by higher ground temperatures to lower altitudes and thus closer to man. Campsite cover and watershed protections are destroyed and rain causes erosion. In addition to creating severe fire hazards, dead and dying trees destroy the beauty of our woodlands.

Naturalist Brought Moth to U.S.

The tragic fact is that the gypsy moth is not even native to this country, having been imported from Europe to Medford, Mass., in 1869 by a French naturalist who was attempting to crossbreed it with silkworms. A quirk of fate caused

a cage of these caterpillars to be smashed in a windstorm, enabling them to escape into surrounding woodlands. Thriving in an environment virtually devoid of natural enemies, the gypsy moth increased rapidly. By 1880, almost 400 square miles around Medford had been heavily infested.

The life cycle of this insect begins in late April and early May when an average of 550 tiny caterpillars hatch out of their fuzzy, buff-colored egg cases. Climbing at once into the tops of preferred trees, they begin feeding on leaves, moving downward as they grow larger on thin silken strands to feed on foliage at all levels. When hardwood foliage is in short supply, these pests will turn to the needles of hemlock, pine, spruce and other evergreens. Whereas two or three defoliations are usually sufficient to kill hardwoods, a single stripping is fatal to evergreens.

While still in an early growth stage (or instar), caterpillars are small enough to be swept off strands and carried by winds from hilltop to hilltop—often for distances of up to 50 miles. As fully grown caterpillars, they measure about two inches in length and can be readily identified by the rows of blue and red spots on their dark brownish bodies which are covered with such stiff hairs that birds won't eat them. If they fall into water, fish will reject them for the same reason.

After a feeding period that lasts up to 10 weeks, caterpillars go into their two-week pupal stage from which they emerge as moths. In this adult form they mate, and during late July and early August the females deposit egg cases on convenient sheltered surfaces such as tree trunks, stone walls and fenceposts, thus completing this vicious cycle. Unfortunately, however, female moths don't limit egg-laying locations to stationary objects. They'll also lay eggs on cars, trailers, trucks, boats and even in the wheelwells of jet aircraft. This is what makes efforts to control the range of these pests so difficult.

Even though stringent quarantine measures continue to be enforced each year by all nine states currently known to harbor gypsy moths, traps put out last year under state supervision caught male moths in Virginia, Maryland and Delaware. Inspection teams in Florida, Minnesota, Texas, Wisconsin, Virginia and California destroyed egg masses found on vehicles—all of which had passed through infested camping areas in New England.

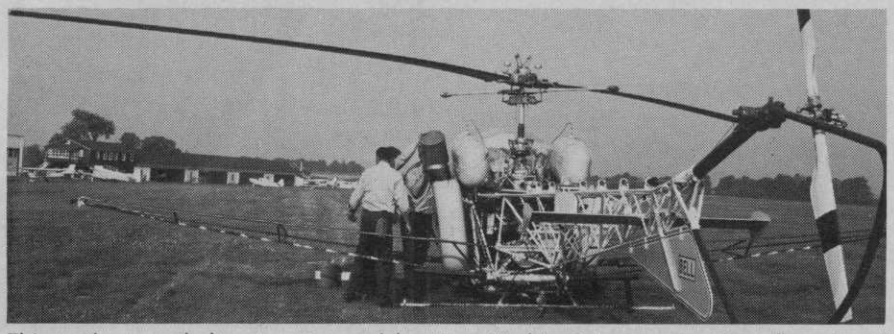
But sheer luck is not enough to prevent gypsy moths from striking out trees. Clearly, a sensible control program must be maintained if these insects are to be held in check. However, chemical control is only one answer to a complex problem that also demands what the New Jersey Department of Agriculture calls an "integrated approach." As the term implies, this supplements so-called natural controls with the use of chemicals as a means of checking insect damage but not at the risk of upsetting the balance of nature or altering the ecology.

Control Approaches Varied

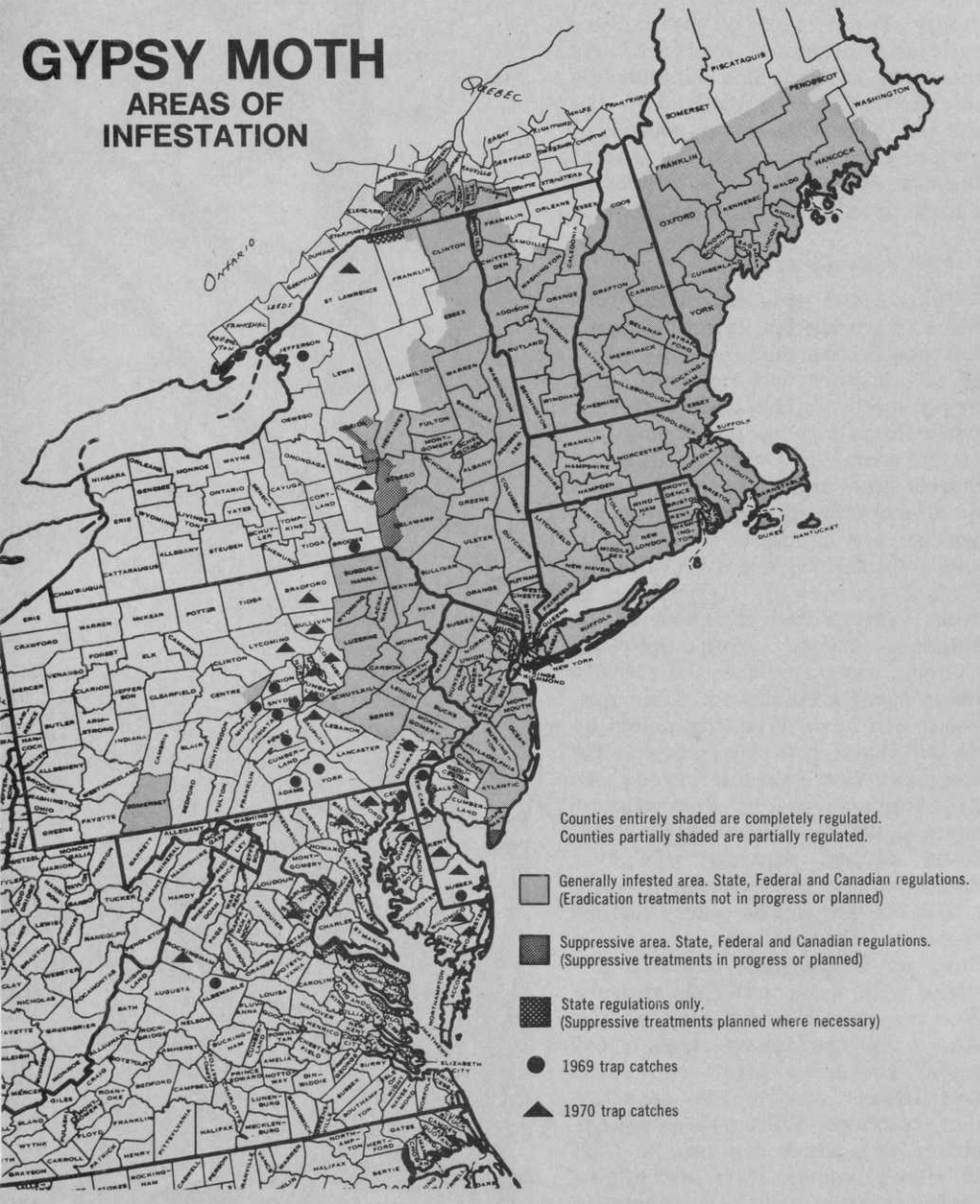
Federal and state authorities continue to work with natural controls and are raising and releasing parasites, predators and sterilized male gypsy moths in the hope that they will substantially reduce populations of this pest. Work also continues on insects sex attractants and insect disease organisms. But these undertakings are expensive to maintain, and William Gillespie, Assistant Commissioner of Agriculture in West Virginia and chairman of the National Gypsy Moth Advisory Council, has stated that the $360,000 being spent annually for these purposes will have to be augmented by an additional $875,000 each year for the next five years if results are to remain favorable. Furthermore, there is little reason to assume that these natural controls will ever entirely replace chemicals.

The current public outcry against the use of chemical pesticides would have us believe that we can dispense with these materials entirely. But the matter is not that simple. And while the debate rages, gypsy moths and other forest and shade tree insects continue to devastate our landscape. With nationwide restrictions against the use of DDT in effect, federal, state and municipal authorities have been compelled to find suitable substitute insecticides that offer acceptable insect control and yet are compatible with current environmental concerns.

Sevin carbaryl insecticide appears to be one of the answers, and again in 1971 this product is to be included in many public spray pro-



This is the type helicopter rig used by New York's state conservation department in its Gypsy Moth control program.



grams. Introduced in the United States 13 years ago, Sevin has been used all over the world to control many destructive insect species attacking 90 different crops and also trees, turf, flowers and shrubs. Sevin provides effective control and is not persistent. It does the job and then quickly breaks down into harmless components that do not pollute water, soil or air. It is low in toxicity to man, birds, fish and other wildlife.

Several different formulations of Sevin are available for tree protection spray programs undertaken by custom applicators and governmental authorities. These include both wettable powders and liquid-type concentrates. Each of these formulations can be applied by air and also through ground equipment such as modern high-pressure sprayers and mist blowers.

The New York Program

Here is the approach being taken to combat gypsy moths in New York.

Commissioner Henry L. Diamond says the Department of Environmental Conservation will undertake landowner surveys in the lower Hudson Valley and on Long Island to determine those areas eligible for aerial spraying. Aerial spraying is one element of a "controlled multi-faceted program," he says.

"It is the professional judgment of the Department that a carefully regulated spraying operation should be conducted in the Lower Hudson Valley and on Long Island, beginning in mid-May and running for six to eight weeks. The extent of the spraying program will be based on landowners' consents, the size of the eligible tracts and funds available."

Other aspects of the Department's gypsy moth control program include:

— Reliance upon natural biological controls such as a gypsy moth egg parasite to keep in check the infestation in Essex County in the Champlain Valley.

— Large scale experimentation on the use of the "sex attractant" and continuation of experimental work on other biological controls with emphasis on methods of inhibiting natural reproduction of the gypsy moth.

The spraying program would be an effort "to hold the line while we pursue a research program to develop adequate biological controls," the Commissioner says:

The aerial spray program would use a single application of the pesticide Sevin and would be undertaken with the approval of landowners. Spray blocks of less than 50 acres in size cannot be treated by air.

The intent of the spray program is to reduce the numbers of gypsy moths from their present epidemic levels to a point where natural biological controls may be effective. Similar spray programs in previous years have resulted in at least a 90% reduction in the gypsy moth population in areas treated only one time. It is hoped that in these treated areas, biological control in the form of a gypsy moth egg parasite—*Oencyrtus kuwanae*— and the introduction of other parasite species will provide the so-called "stacked control" required to keep

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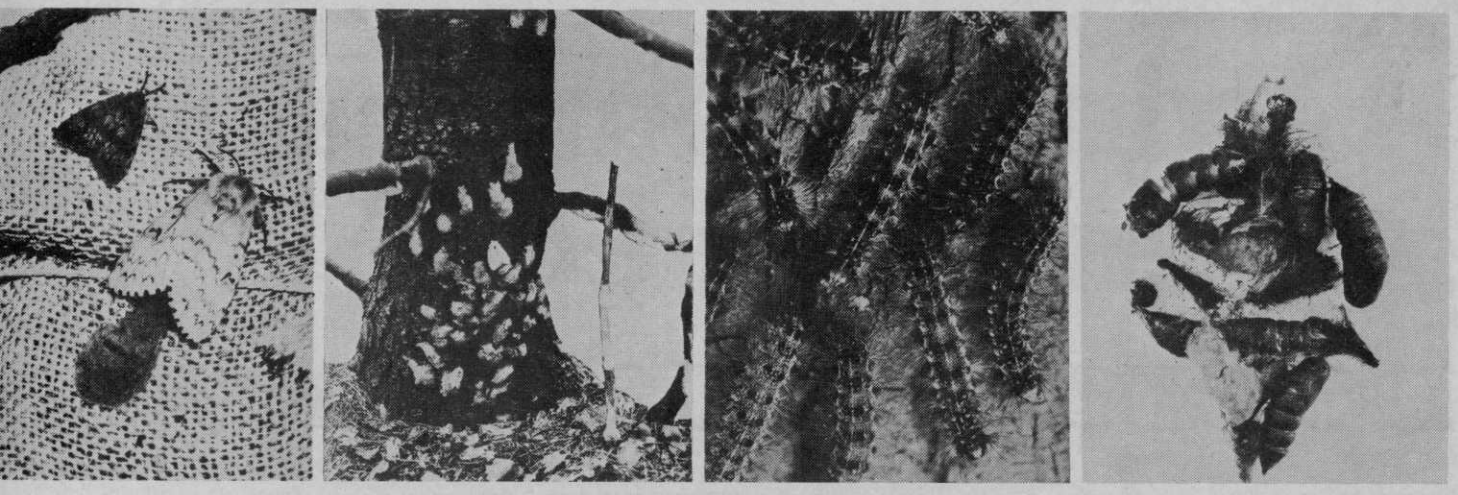

Identification from the left: Female gypsy moth (white) and male gypsy moth (gray); femal moths laying eggs on a tree; gypsy moth caterpillars (in late instar) hatch and feed on leaves; then go into pupal cases from which they emerge as moths.

the gypsy moth in check.

According to experts in the Department of Environmental Conservation Bureau of Forest Insect and Disease Control, *Oencyrtus kuwanae* can be employed to reduce infestations about 25% annually. This technique, therefore, is suitable for epidemic, or low level infestations and is used under those conditions.

Experimental work on other biological controls in addition to parasite and predator attacks on the moth is being explored by the Department. Two of the most interesting attacks focus on a reproductive inhibiting technique.

One method is to synthetize the scent which female moths use to attract male moths for mating. This synthetic attractant is employed as bait in a trap. The hapless males follow the scent and are captured, thus removing them from the breeding population.

Experimentation with this "trap" approach is planned for the Binghampton area and in Jefferson County in the Perch River-Cape Vincent area.

Another method is the "confusion technique" in which an area is saturated with the female sex attractant. It is thought that this odor will so thoroughly confuse male moths that a portion of them will be unable to mate. As yet, no area has been selected for experimentation with the "confusion technique."

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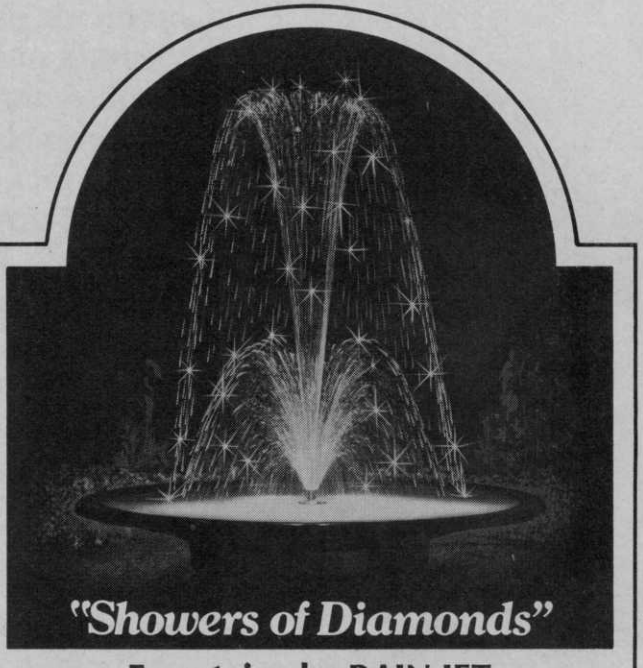

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When the Chinch Bugs Struck,

THEY CALLED A 'COPTER

Guy Tedesco, left, greens superintendent at the Country Club of New Seabury, Mashpee, Mass., found helicopter application of insecticide was quick, efficient, and economical in preventing chinch bugs from destroying two golf courses at the club. He is discussing the problem with Al Barufaldi, center, Bay Colony Helicopter, Plymouth, Mass., which provided the craft, and Richard Canning of Chemapco, Inc., the application division of R. F. Morse & Son, Inc., West Wareham, Mass., distributors of the insecticide.

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WHEN GUY TEDESCO, greens superintendent at The Country Club of New Seabury, Mashpee, Mass., on Cape Cod, diagnosed an infestation of chinch bugs, he knew he had a tough problem. The insects, about one-fifth of an inch long, black, with white patches on their wings, are well known for their ability to literally suck the life out of lawns by feeding on the juice of stems of grass.

Tedesco determined that chinch bugs had invaded both courses of the club—known as "The Pebble Beach of the East" because of its location on the southern shore of Cape Cod overlooking Nantucket Sound. Its Blue Championship course is 7,175 yards, par 72, and there is a less demanding, but sporty, Green Oak—Pine course.

Since the season was just beginning, Tedesco had to act fast. But how do you control the insects promptly, efficiently and economically over a wide-ranging 90 acres of golf courses involving greens, trees, fairways, and roughs?

Tedesco knew that Aspon 6 E® is specially formulated to kill chinch bugs but that still didn't solve his application problem. He talked it

over with Chemapco, Inc., the application division of R. F. Morse & Son, Inc., West Wareham, Mass., who came up with an answer: apply Aspon by helicopter.

The insecticide was sprayed over the entire 90 acres in a dilute mixture of 15 gallons per acre. Total application time was two hours.

After the application, the irrigation system of each course was programmed to wet down all treated areas to help drive the insecticide in the crowns of the turf. Tedesco got welcome help the next day when a series of showers soaked the roughs and other areas not covered by the irrigation system.

After a few days, a close inspection showed the chinch bugs invasion had been effectively checked.

Guy Tedesco was so pleased with the results that he recommended the aerial application program to other courses in the area. Soon after, Chemapco took to the air to spray Aspon on 50 acres at the Oyster Harbors Golf Club in Osterville, Mass. Results were equally good.

Because of the success of its helicopter application program, Chemapco plans to offer it as a special chinch bug control service in 1971.

The Budget Cutter

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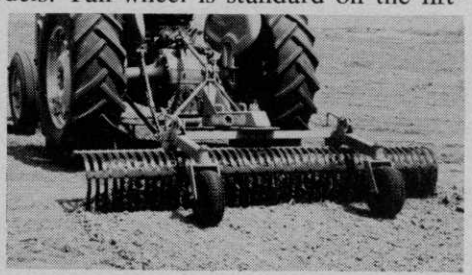
When economy really counts, count on saving when you buy and continued savings as long as you operate the SATURN VI. Servis' new 72-inch rotary mower is designed especially for low-cost, light-duty general mowing, but built with heavy 10-gauge steel for long life and low maintenance.

Available in lift-type or pull-type with torque limiter and replaceable skid shoes standard on both models. Tail wheel is standard on the lift-type. Pull-type features an automatic leveling device, to maintain a uniform cut, and reversible wheels for either center or trailing position.

Optional equipment available includes dual shredding blades, front and rear chain guards, drive-shaft safety shield, and dishpan-type blade carrier. For wheel-type tractors with drawbar ratings of 30-50 hp. See your nearest authorized Servis dealer for the best in economy mowing — the SATURN VI.



The Servis Landscaping rake is available in two models. The Little Rhino Model features right and left offset. The Lone Star Model is recommended for operations where offset features are not required.

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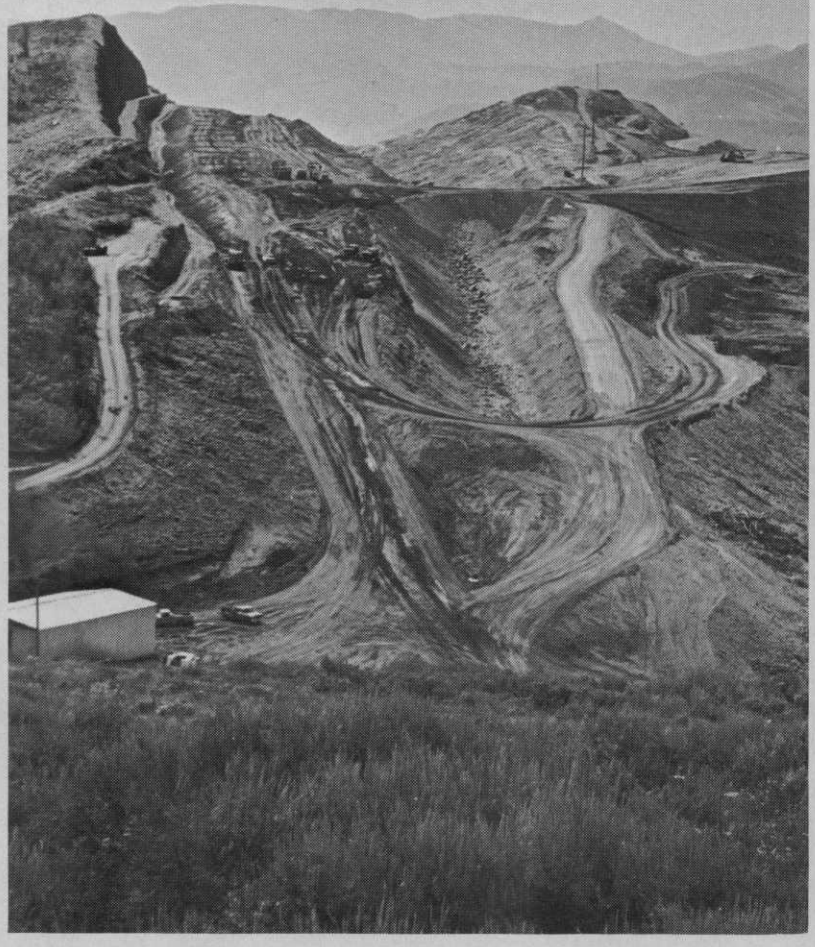
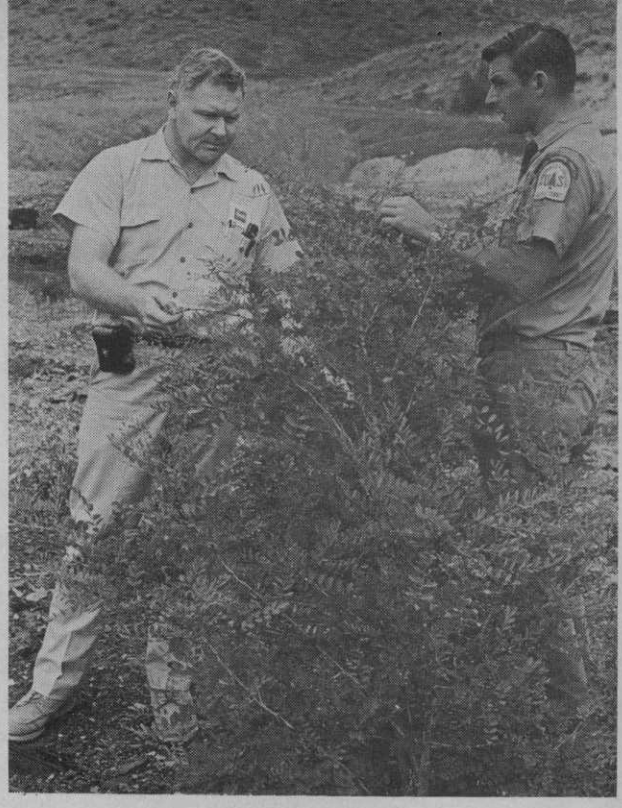




By RALPH BRANSON
Syndicated World Trade Press
Boise, Idaho

DONALD A. SCHULTZ, Supervisor of the Caribou National Forest, in southeastern Idaho, reports that the USDA project of growing trees, shrubs and grasses on phosphate cleared land has met with some success despite the short time the project has been under way.

Objectives are to protect the quality of the water coming out of the water sheds, to provide stabilization of soil on surface mined areas, to return the mined areas to production and make them aesthetically acceptable.

Phosphate companies supporting the project financially are: The Monsanto Company, J. R. Simplot Company, El Paso Products Service Company, and FMC Corporation.

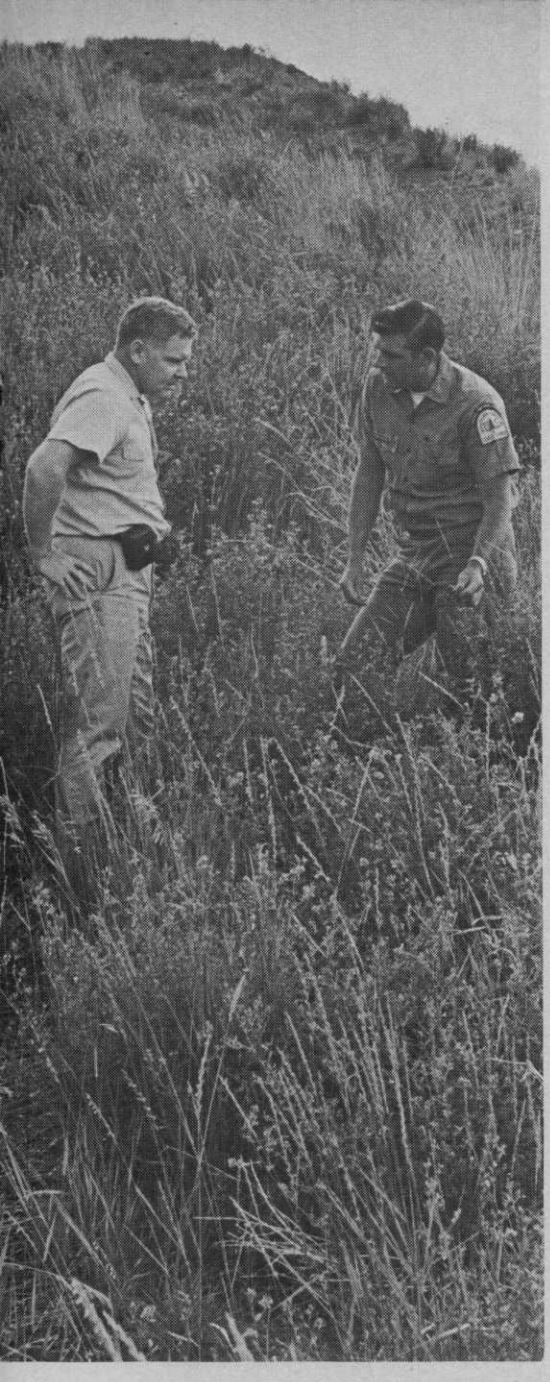
The complete report was released in March. A limited supply of copies are available by writing Caribou National Forest, P.O. Box 4189, Pocatello, Idaho 83201.

Accumulated data indicate which species of trees, shrubs and grasses are the best adapted to the revegetation of surface mined areas in southeastern Idaho and which treatments are the most beneficial and feasible. Information resulting from this study should prove to be of incalculable value to anyone who may be confronted with the problem of revegetating land that has been stripped of its top soil, or anyone who may be interested in stabilizing the soil on steep slopes.

The Project in Capsule

Here is a brief resume of the five-year study. A total of 716 plots for plantings have been established on three mine sites and 11,213 trees and shrubs have been planted. Plantings consist of: 1—tree and shrub, seedlings and cuttings plantings, 40 species; 2—grass, seed plantings, 12 species; 3—forb, seed plantings, 6 species; and 4—tree and shrub, seed plantings, 17 species.

Various treatments tried and evaluated were: 1—Hydroseeding: a mixture of water, seed, fertilizer and other ingredients, formed into a slurry, spread under pressure; 2—Fertilizer: N20-P10-K10 was applied by hand broadcasting at the rate of 200 lbs. per acre; 3—Mulch: straw was spread on the surface after seeding to provide stabilization and protection; 4—Water was supplied



Long before environmental issues reach a boiling point, industries involved in surface mining of phosphate deposits recognized the problems of scalping a mountain and leaving it to bleed. Four companies helped begin a study five years ago on revegetating surface-mined areas in Caribou National Forest. They worked with the U.S. Forest Service. The typical surface mine, far left, was contour-graded, soil was worked, fertilized, seeded and planted. George Atwood, left, of Monsanto Company, and Ken Dittmer of Caribou National Forest, are examining plantings. At upper center is a locust tree, lower center is crownvetch, and at right is a mixture of grasses and forbs, including alfalfa, wheat, rye, clover and fescue.

at each initial planting of trees and shrubs; and 5—Canadian and Charlottetown barley was planted to provide a temporary nurse-crop for protection and stabilization.

The seedbed was prepared by dragging the plot by tractor to create ripples and, then the area was raked to provide seed cover.

Broadcast seeding by helicopter also was tried. Unfortunately, due to personnel changes and prior job commitments, many of the plantings did not receive all of the treatments. This was particularly true of mulching, watering, raking and fertilizing.

Vegetation Most Successful

At the present time, findings indicate the greatest success has been with trees and shrubs grown from seedlings and cuttings. Based on the criteria—survival, growth and vigor, 10 of the best adapted trees and shrubs are: Russian Olive, cottonwood, dark locust, American elm, cotoneaster, box elder, pea shrub, honey locust, choke cherry and blackberry. Based on germination, density and vigor, the best adapted grasses were: Intermediate wheat, smooth brome, hard fescue, pubescent wheat, and crested wheat grass. Of the six forbs tried, the three that showed the best growth performance were Ranger alfalfa, yellow clover and crownvetch.

As for trees and shrub plantings by seed, the results were unsatisfactory. Very poor germination was experienced with the 17 species tried, indicating this method is not practical. In general, it was found that trees and shrubs do better on the flat gentle slopes. This observation was made on all mine sites.

Of course, there were some exceptions, but for the most part, grasses did better on the slopes. The chances for seed cover and germination were better on the slopes, because the material on the slopes was looser than it was on the flatter areas. Broadcast grass seeding by hand was the most effective method tried, while hydroseeding and broadcast seeding by helicopter were the most unproductive methods employed.

Scarification was beneficial in compacted areas for germination and growth. Compaction of material on flat areas, posed the most difficult revegetation problems. Often rainfall is heavy during stripping operations; this together with the movement of heavy equipment over finer material, while dumping waste, caused extreme compaction. In fact, some of these flat areas were so compacted that water would not penetrate or infiltrate more than ½" to ¼" below the surface. When some standing pools were ex-

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Ask your dealer about Dacamine Turf or, write Agricultural Chemicals Division, Diamond Shamrock Chemical Company, 300 Union Commerce Building, Cleveland, Ohio 44115.

Diamond Shamrock Chemical Company

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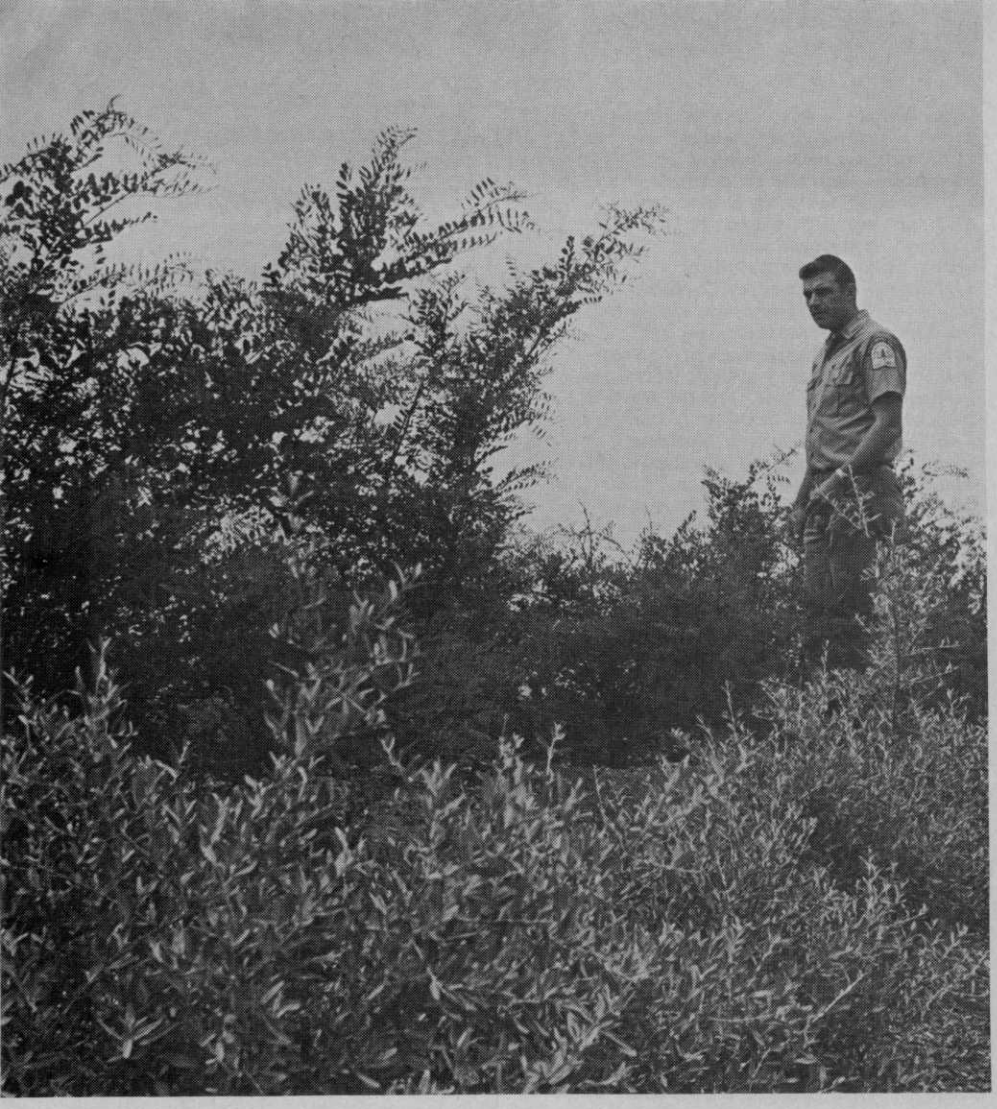


Dittmer has learned that deciduous plants outperform coniferous species.

amined, it was found the soil 4" below the surface was dry. This condition prevents the plants from developing healthy roots. The scarification method that got the best results was the one where top material was ripped by tractor to a depth of at least 10".

Another factor which affects revegetation is color of the soil. It was discovered that black soil inhibited plant growth, while other colors appeared to have no significant effect. Darker soil absorbs heat readily, drying the surface material to a depth of a few inches within a few days after receiving moisture.

Texture of the soil—too fine or too coarse—is also an important consideration in revegetation. Fine material becomes compacted and cuts off water percolation. This inhibits germination and plant growth. Porous soil, on the other hand, has very little water-holding capacity and provides a poor seedbed. A mixture of both fine and coarse materials provides optimum water penetration and holding capacity and allows root development on established plants.

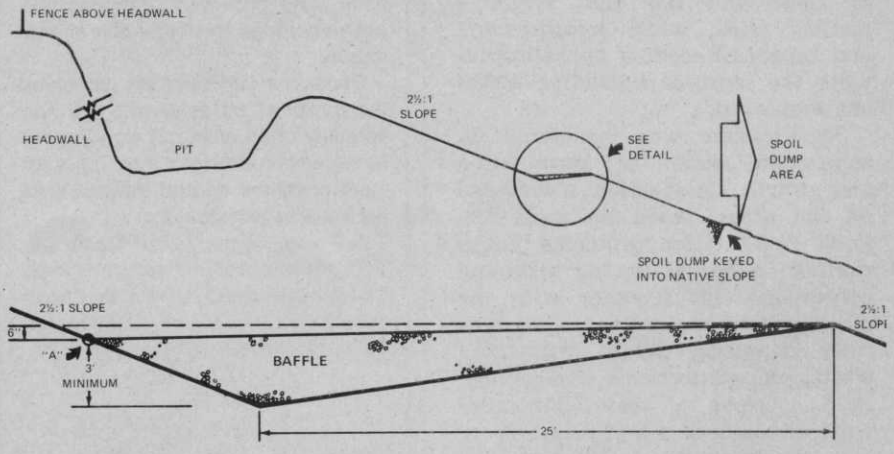
As for the application of 20-10-10 fertilizer at the rate of 200 lbs. per acre, it was beneficial to the growth of trees, shrubs and grasses, but was not necessarily essential to plant establishment. During the first growing season, the fertilized trees were much greener and more vigorous than unfertilized. Once grasses had been established, success depended on development of density and vigor and here is where fertilizer was of assistance.

One of the most important factors affecting revegetation is stability of the material on slopes. The lack of stability on steep slopes may make revegetation impossible, or at least extremely difficult. It is advised that where ever possible, slope angles should be constructed on a minimum of 2½ to 1, or 40%. Slopes constructed 1½ to 1, as a rule, do not provide needed slope stability.

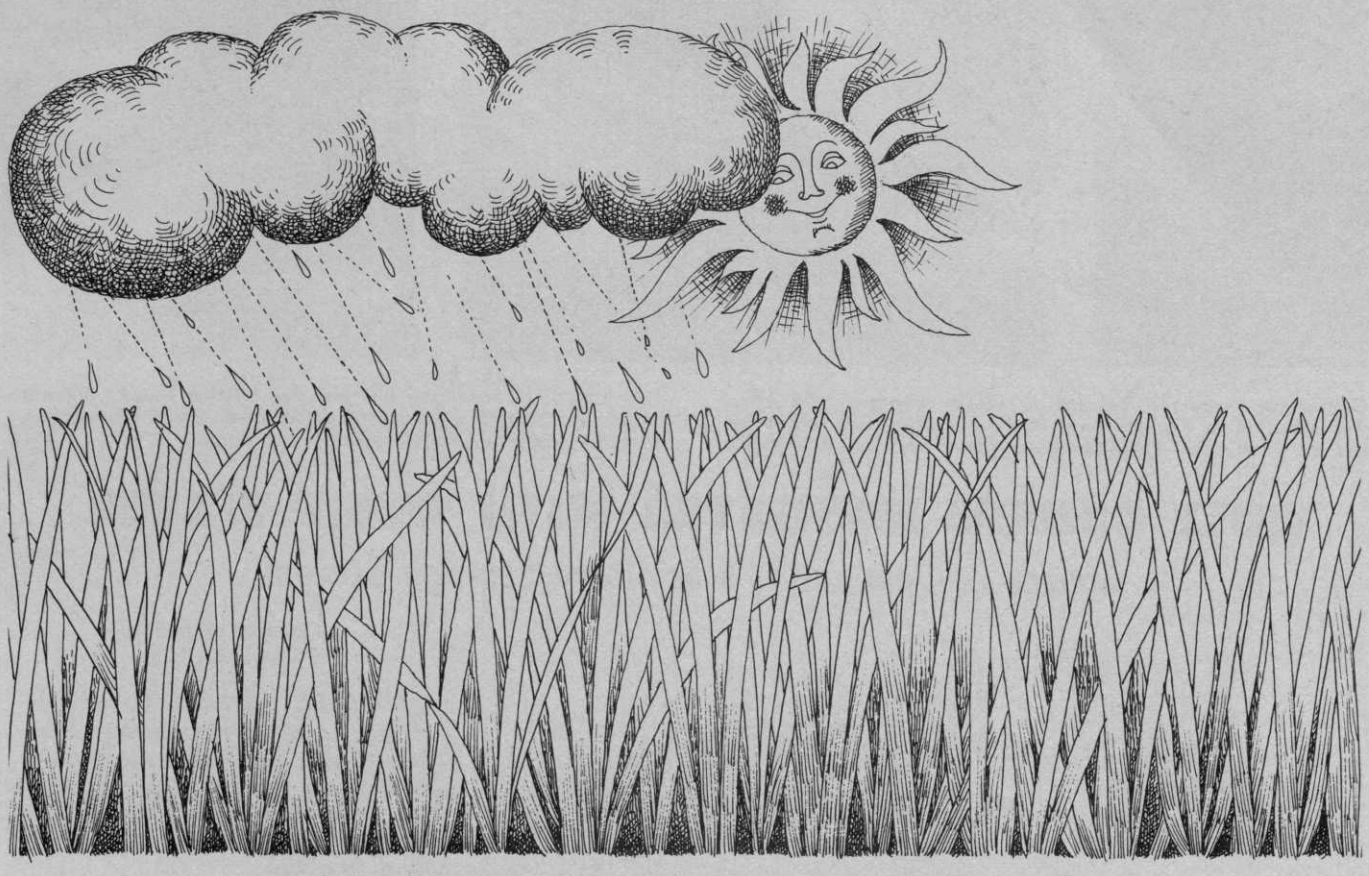
Stabilization cannot be accomplished by planting alone. Rill and gully development, as well as mass movement of waste material may prevent satisfactory revegetation. Excessive run-off and soil movements begin to take place immediately after waste material, from the stripping operation, is laid down. In many cases, plants are not able to establish themselves, because of the movement of this material. Other plants are swept away or are buried, when sides are eroded away. Even after grasses have been established and natural reseeding begins, much of the seed produced is washed off these steep slopes. If the slope is constructed to insure stability, then plant establishment is likely to be achieved.

Contour trenching in intervals of 25′ and 50′ has been partly successful in stabilizing 1½ to 1 slopes. However, contour intervals of 75′ or 100′ have proved unsatisfactory due to excessive run-off down steep long slopes.

One disadvantage of contour trenches is that they tend to fill up with fine material washed down from the slopes, adding to the mass weight of the material and causing sluffing. Contour trenching should be regarded as a measure to reduce outside damages in the event the slope angle cannot be flattened.



This is a typical mine profile. A bench, 25 ft. wide, is constructed at contour intervals of 25 or 50 ft. The bench is tipped so the inside edge is three feet below the outside edge. Check dams are placed at 50 to 100 ft. intervals.



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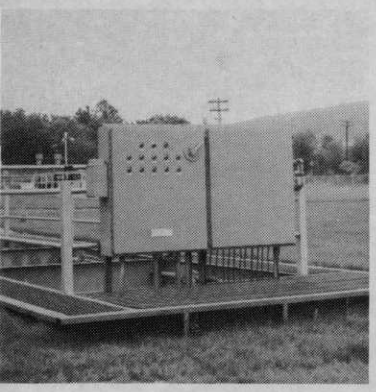
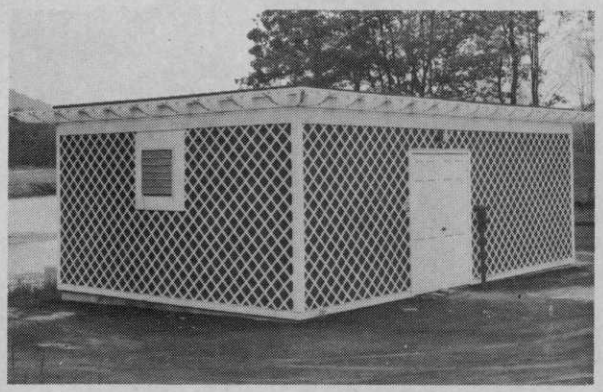
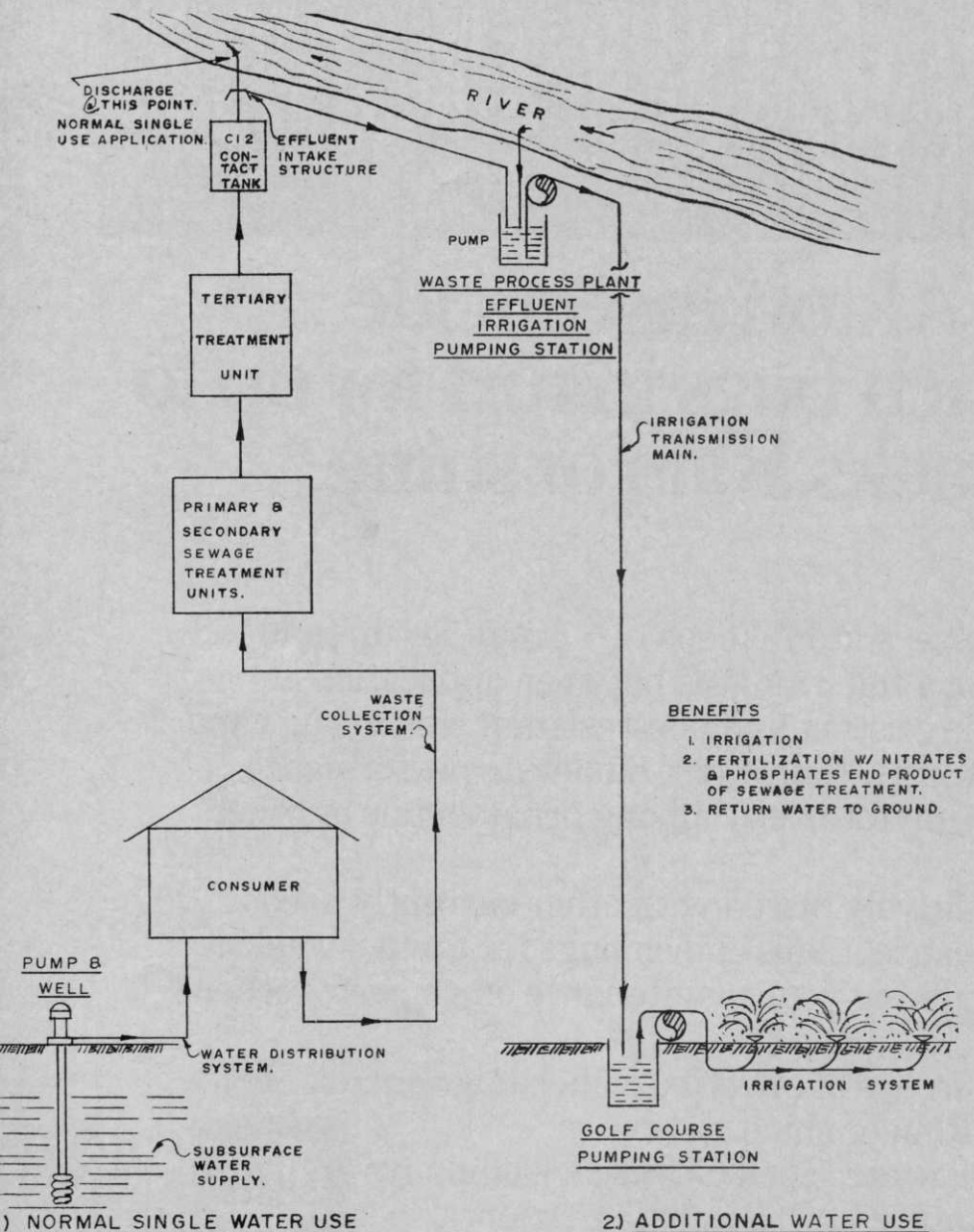




Consulting engineer Richard J. Jeske prepared the schematic below to explain how Panther Valley CC's water reuse system works. Pictures above show what the key facilities look like. From the left are the "Hydro Clear" tertiary treatment unit, the golf course irrigation pumping station, and the processed waste pumping station.

GOLF COURSE IRRIGATES WITH 'USED' WATER

Source Is Community's Sanitary Sewage System



WATER REUSE SYSTEM

By ALBERT S. KESHEN
Plainfield, N.J.

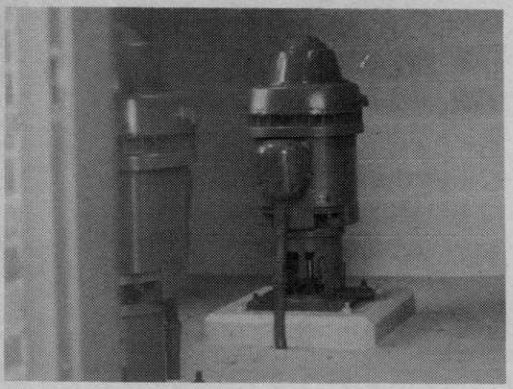
SANITARY SEWAGE disposal design to tertiary stage with treated effluent circulation for irrigation of the swanky golf course of the Panther Valley Country Club, Allamuch, N. J., has resulted in these benefits:

1. Built-in liquid fertilization from the natural water supply source.
2. Assurance of ample water at all times without worry over any possible drought or municipal bans.
3. Conservation of the water supply through recirculation of the water in this reuse system.

Panther Valley is an expansive residential community developed in a mountain setting in an isolated area in the northwest section of the state about 60 miles from New York City. A former 2,000-acre country estate has been converted to a $65 million new community of townhouses, apartments and luxurious homes that will eventually provide country living for 2,000 families.

The 18-hole, well-trapped golf course, was designed by Robert Trent Jones, internationally-famous course architect. Early in the planning stage it was realized that the 60-acre course, measuring 6,850 yards from the back tees, required 250,000 gallons of water a day for irrigation. A normal well system would only yield 100,000 gallons of water daily, which means a deficiency of 150,000 gallons.

Water supply comes from the Pequest River and a lake on the course which is fed by springs and runoffs in the area. The lake requires constant replenishment. Fur-



This is the interior of the waste pumping station.

thermore, the normal primary and secondary treatment of water for purification would not be sufficient since a state fish conservation and hatchery is close by and the authorities warned that standard waste treatment might endanger the ponds.

Faced with this problem, Panther Valley's consulting engineer, Richard J. Jeske, Springfield, N. J., developed his concept of the tertiary treatment through an aerated sand filter. The water is purified through primary and secondary sewage treatment units, then piped to a tertiary unit for final purification. Instead of being discharged into the river, the water is piped over and over again into the main irrigation pump in the center of the course with eight sprinklers distributed to assure adequate irrigation. There are 8,000 feet of pipe from the irrigation pumping station at the sewage plant on the premises where the effluent is treated to the irrigation pumping station at the golf course.

When the community is fully occupied this system will handle 800,000 gallons of water daily, of which only 250,000 will be required to irrigate the golf course.

"Our objective of cleanliness has been achieved through this means," said Chris J. Cerullo, manager of the Pequest Water and Sewer Companies which operates the sewage treatment plant with capacity to serve future construction outside Panther Valley. "As a test we filled a six-foot tank with this treated sewage and were able to see clear through to the bottom."

Under this recirculation system, the water goes back into the subsurface strata and can be used over and over again for well water and irrigation purposes.

Another big advantage of this sewage treatment is the retention of the fertilizing elements in the water, thus cutting down on main-

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tenance costs, since less commercial fertilizer is required. Although all used water to be discharged into rivers must meet the standards set by the Federal Water Pollution Control Act of 1965, there is a provision that this used water still can contain nutrients in the form of nitrates and phosphates that are the main cause of algae in rivers, streams and lakes. But, with the reclaimed water at Panther Valley being used for the irrigation of the golf course and some of the balance being made available to black dirt farms nearby, the natural water reservoirs near Panther Valley will remain unpolluted, especially during the summer months.

Since the used water contains nitrates and phosphates that have a nutrient value at a pH close to seven, the golf course is being irrigated with a form of built-in liquid fertilization. This factor, according to Leonard Schilling, grounds superintendent, will prevent disease such as dollar spot and brown patch, as well as reducing the expense of purchasing additional fertilizer and labor costs in applying it.

"Turf has been mainly seeded by our own staff," said Richard Hughes, golf pro. "We've used Merion blue grass with reseeding of Astoria, Seaside, and Penncross bentgrass on the fairways, tees and greens; then cut low to eliminate bluegrass to make it all uniform. Kentucky bluegrass is for the rough. We water in 10- to 12-hour cycles. With the improved irrigation system, we're always assured of a course that's green and lush, even the rough."

The reused water that is not applied to the golf course and the nearby dirt farms is being used to create ponds and lakes. "These artificial reservoirs are half used water and half fresh water," said Philip Barske, Panther Valley's conservationist. "The water purification system can also be used to irrigate the millions of dollars worth of lawns, trees and shrubbery within our 2,000-acre complex during the dry periods."

Engineer Jeske, although satisfied with the results attained, does not claim that he has worked out a panacea for all irrigation problems. He points out: "It has worked out well for our particular set-up and could be applied to other fairway-living complexes, or even golf courses near a municipal sewage treatment plant, provided a tertiary treatment unit has been installed. It costs $60,000 and those miles of piping and booster pumps might not be required on other projects to get the water to the main pumping station. In certain areas where water is scarce and costly, the system could conceivably be ideal because the piping and pumping costs would be less than for the price of water itself."

Taking the long-range view, however, Philip J. Bowers, II, president of Panther Valley's development company, appeared well satisfied with the investment outlay of his water sewage system. "We won't have to be concerned if there's a drought or worry if the municipal council passes an ordinance cutting back on our use of water," he said. "The reused water is free, which is quite a savings since it costs almost $21,000 yearly to irrigate a course in northern New Jersey whereas our only cost is pumping and that only runs $3,500 a year. Moreover, the long-range view, which we are striving for has prevailed. It's all in accordance with our philosophy that 'only excellence will survive'."

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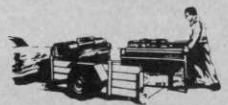

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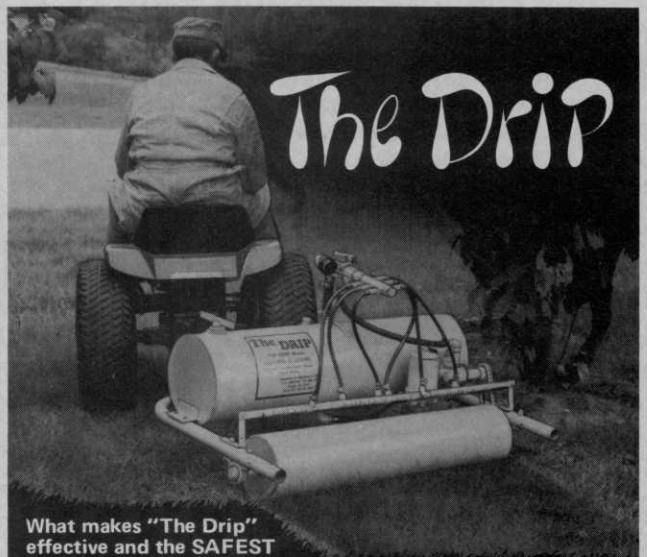

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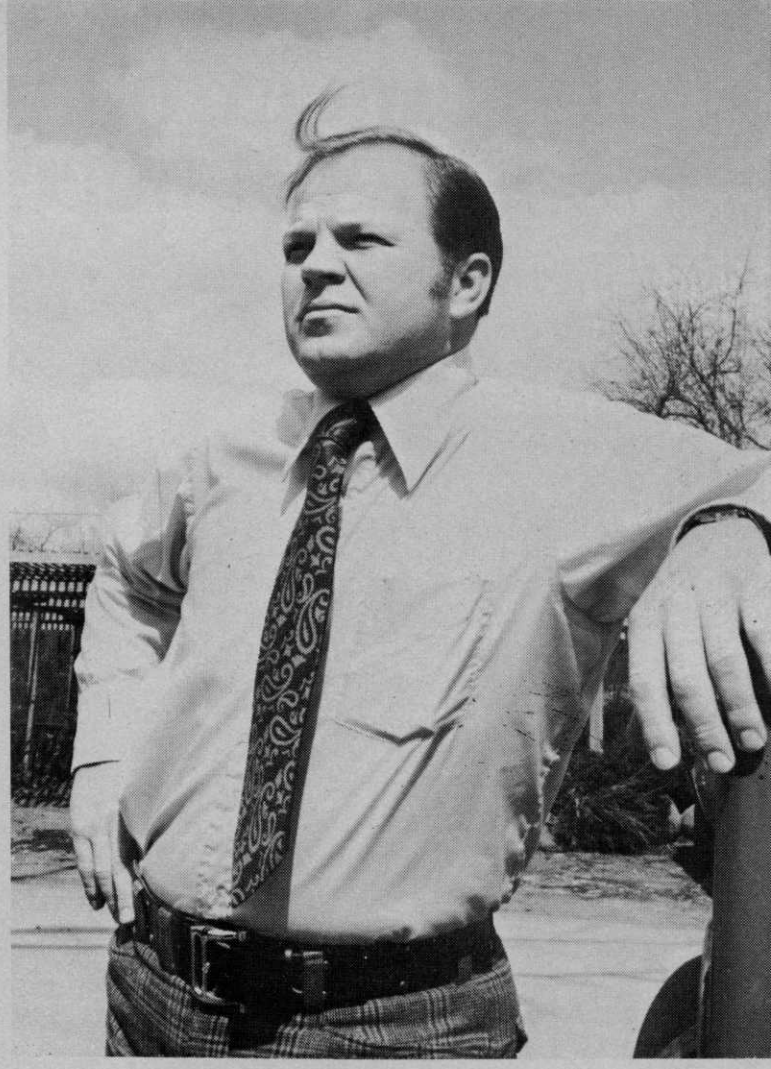
YOUNG MAN IN A HURRY

Clarke Fenimore, right, is the young Kentucky equipment distributor that's in a hurry. Below, he and his partner, Doug Wearren, left, check newly arrived equipment.



FREE ENTERPRISE is still alive. Put together hustle and salesmanship — which add up to hard work — couple these with ability and the old formula for success in America still holds.

These account for a fast start for one young Kentucky distributor — 32-year-old Clarke Fenimore. He's been in business a year, and if he keeps running he'll build a million dollar corporation in "five — no," he says, "make that 10 years for the record."

Whether he does or not naturally depends on many factors. But regardless, the fact that a young man can sell his way into his own business — without funds — and do it in the span of a year is a plus for the commercial turf industry.

Fenimore did have many things in his favor. He had a sizable reputation as a salesman of commercial turf industry products. (He worked with U.S.S. Agri-Chemicals with headquarters at Atlanta, Ga.) His territory comprised Kentucky and part of Indiana, the territory where he now distributes. Thus, he knew his customers and he had friends — one of whom became his partner — in the industry.

Further, he went into business for himself partly because he found himself among the unemployed. He had originally resigned from U.S.S. Agri-Chemicals to manage a garden center chain, slated to garner the bulk of this kind of consumer business in the Louisville trade area. It didn't pan. The chain project never left the starting gate. And Fenimore found that he needed a job. Which was how Ky-Inna Turf Supply came into being.

Douglas R. Wearren, only 35 but a well-known landscaper and nurseryman operating in seven states, suggested that Fenimore sell chemicals and fertilizers as a distributor. This he did, starting with products of W.A. Cleary Corp., Diamond Shamrock, Velsicol, Gordon Chemicals, Agrico, and IMC Fertilizer.

In lieu of money, he used credit of these corporations and his name and reputation (plus credit rating of Doug Wearren).

Now he and Wearren have a corporation. Neither has put any personal funds into the venture. However, because sales were booming early last year, they did form a corporation with a third partner who put money into the venture. Insurance policies on each of the three principals provided protection against loss. Unfortunately, and sadly for all concerned, the new partner William Kelly, a well-known concrete paving contractor, was shortly after killed in an auto accident. Insurance money permitted Wearren and Fenimore to repurchase his stock.

About this time, Fenimore started adding equipment to his lines. To name a few, he handles National Mower, Hahn West Point, Smithco, Roof, Terrain King, Roseman, Lewis Ball Washers, Drip, Cyclone Seeders, Locke, Bolsey-Devere, Simplicity, and Jacobsen's small tractors. A newly opened division is tied to commercial turf irrigation.

Though Fenimore relates his experiences in a somewhat light and airy manner, there is no mistaking the drive behind his operation. Both he and Wearren have some very definite ideas on marketing. They are putting their experience and knowledge on the line along with long hours and hard work.

Fenimore believes in working closely with customers who in turn work with them. Goal of Ky-Inna (pronounced Kentucky anna), he says, is to package chemicals and equipment to fit a customer's need. At the same time, they like to carry

lines which are nationally advertised. This gives them an intro to new business and at the same time helps familiarize the customer with the product. Because Ky-Inna warehouse and offices are located in a rural non-commercial area, overhead cost is low.

The firm handles the bulk of its own transport. Company trucks make regular pickups in Houston and similar points and weekly trips to Chicago. Six vans purchased from a Louisville transfer company make it possible to drop both van and supplies at customer headquarters. In this way, unloading can be done as the load is used or at least at the convenience of the customer. Further, as Fenimore notes, the advertising on the side of each van doesn't hurt the image of the business. He has good reason inasmuch as one of the vans has, for the last several weeks, been on the grounds of Colonel Saunders' new $3 million international headquarters building at Louisville. Wearren, Fenimore's partner, has the landscaping contract.

Fenimore's business is unique in another way. He does not operate a service shop. Practically every commercial turf customer, he says, is equipped to do his own service and repair work. What this kind of customer wants—and wants fast—is immediate delivery on parts. This Ky-Inna is prepared to do. The firm maintains a complete parts inventory.

The type of customers sold by Ky-Inna dictates the success of this operation. There are no walk-in customers. Fenimore sells golf courses, industries with factory lawns to maintain, governments including state, county, municipal and federal, and garden centers. No discount houses are included in the garden center trade.

Of particular interest to the commercial turf industry is the key buying influence for each market. When it comes to golf courses, Fenimore says he wants to deal with the superintendent—and him only. "We never go over the head of the superintendent," he says. A course management defeats itself if it does not let the super make 100% of the buying decisions on both equipment and chemicals. Management must let the superintendent "run the course" because he is the one responsible for the turf.

For industrial accounts, Fenimore and his salesmen (the firm has six full-time employees) try and work closely with the man responsible for overall turf maintenance. Industry titles vary here, so some discretion is necessary to reach the key buying influence.

Fenimore parks a new rotary mower unit.

For government bodies, a main-

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tenance superintendent with a title having something to do with grounds will be a key person to contact. Likely he will make recommendations and a purchasing agent will put the order out for bids. In any case, the firm will probably work with several persons in getting the business.

Federal accounts are different. Personal contact is a must.

A management key in building business for a new firm is a uniform markup. Fenimore believes this has aided the fast start Ky-Inna has enjoyed. Because they do not headquarter in a congested area and have less than imposing warehouse space, they do keep overhead low. Everyone pays the same price, and this in itself, Fenimore believes, helps business.

Where the firm goes depends not only on management but on the total economy of the area. Fenimore no doubt will continue to push. He is a young man in a hurry but he still finds time for living. Besides a family, Alberta, his wife, and two daughters, he is active in civic events. He is a registered football official and was among 20 of some 400 picked to handle the state playoffs this past season. He is also a volunteer fireman (and drives the aerial ladder truck as well as climbing it at times).

Likely his interest in athletics officiating is a follow-up of his college days when he was the college radio voice of the Western Kentucky Hilltoppers, a team recently in the NCAA playoffs. (Incidentally, he attended all playoff games.) He also, while in college at Western Kentucky, was a dorm counseler, worked in the college Public Relations office, college post office, was a member of the Circle K Pershing Rifles Drill Team, Alpha Gamma Rho fraternity, in which he helped organize and was the 1st Noble Ruler. Somewhat incidental to all this activity was the fact that he also earned an agri-business degree.

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Here's How to Whip Selected Turf Pests

Entomologist Dave Shriver of the University of Maryland has released information, in view of changing pesticide-use regulations, on control of insect pests on commercial turfgrass.

To better understand how control can be achieved, he has classified the pests in either above-ground or below-ground categories.

For below-ground pests, such as whitegrubs and wireworms, the critical control need is to get the pesticide into the soil. For above-ground pests, such as sod webworms and billbugs, the grass blades and ground surface should be treated to get a minimum of wash off or soil penetration. The above-ground pests, he added, can be further classified into those that inhabit the thatch near the soil surface, but feed on grass blades (such as sod webworms and chinchbugs) and those that move and feed upon the grass blades (such as aphids and billbugs).

Here is Shriver's control information for these selected insect pests:

APHIDS		
Insecticide	**Formulation**	**Amount/ 1,000 sq. ft.**
Diazinon	AG 500WP	1.25 fl. oz.
	50% WP	1.25 oz.
Malathion	57% EC	1 fl. oz.
	25% WP	5 oz.

Remarks: Do not use granular formulation. Mix the suggested amounts in 10-15 gallons of water as a spray. Do not water in treatments. Do not

cut grass for 2-3 days following application.

CHINCHBUG		
Insecticide	Formulation	Amount/ 1,000 sq. ft.
Aspon	66% EC 5% G	¼ pt. 3½ lbs.
Diazinon	50% WP AG500 EC 10% G	6 oz. 6 oz. 2 lbs.
Carbaryl (Sevin)	50% WP 10% G	8 oz. 2 lbs.
Ethion	25% WP 25% EC 25% G	12 oz. 8 fl. oz. 12 oz.
Trithion	25% EC	12 oz.

Remarks: Water prior to treatment. Mix the suggested amount of insecticide formulation with 25-30 gallons of water for treating each 1,000 sq. ft. If granular formulations are used, water in following application. Apply first treatment in late May to early June, repeat 2-3 weeks later. Only one application of Aspon is necessary. Where infestations are discovered later in the season, treatments may be applied when insects are found. Grub-proofing treatments will not control chinchbugs.

SOD WEDWORMS		
Insecticide	Formulation	Amount/ 1,000 sq. ft.
Carbaryl (Sevin)	50% WP	8 oz.
Chlordane	40% WP 75% EC 5% D	5 oz. 2 fl. oz. 2.5 lbs.
Diazinon	50% WP AG500 EC	4 oz. 4 oz.

Remarks: Applications in the evening are preferred and should not be watered in following treatment. Sprays are preferred; apply by mixing with 10-20 gallons of water. Do not cut grass for 1-3 days after application.

WHITEGRUBS WIREWORMS		
Insecticide	Formulation	Amount/ 1,000 sq. ft.
Chlordane	10% G 5% D 40% WP 75% EC	2.5 lbs. 5 lbs. 10 oz. 4 fl. oz.

Remarks: A long residual type insecticide is recommended. One treatment every 5-6 years is adequate. Chemicals penetrate slowly into the root zone area of the soil. Generally, the chemicals are slow acting against mature grubs, requiring at least three weeks or more to give effective kill. Applications are made to protect against reinfestation primarily or against young grubs in the fall.

Emergency transplant operations . . .

always a success with Ryan sod cutters.

Winter kill, fungus and disease can hit the best-kept fine turf areas. Excellent insurance to keep these areas in lush, living grass is a sod nursery for emergency repair. And the best way to perform the transplant operation is with a Ryan Sod Cutter. Ryan has a size and model to suit every need.

Ryan JR Sod Cutters (1)

. . . turf-world's most popular sod cutters are compact and highly maneuverable. Self-propelled, easy-to-operate JR Sod Cutters are available in three models capable of cutting 9, 15, or 20 sq. yards of sod per minute. They're ideal for average-size sod nurseries.

Attachment blades are available for all models for trenching, edging, tilling, pipe laying and subsoil aerification.

Heavy Duty Sod Cutters (2)

. . . for large sod nurseries and big transplanting jobs. These *extra* rugged machines are built to commercial specifications. Five models are available, enabling you to cut up to three acres of sod per day. All models come in a choice of cutting widths from 12″ to 24″. They operate smoothly and quickly with dependable, 2-speed transmissions.

Write for FREE Ryan Equipment Catalog.

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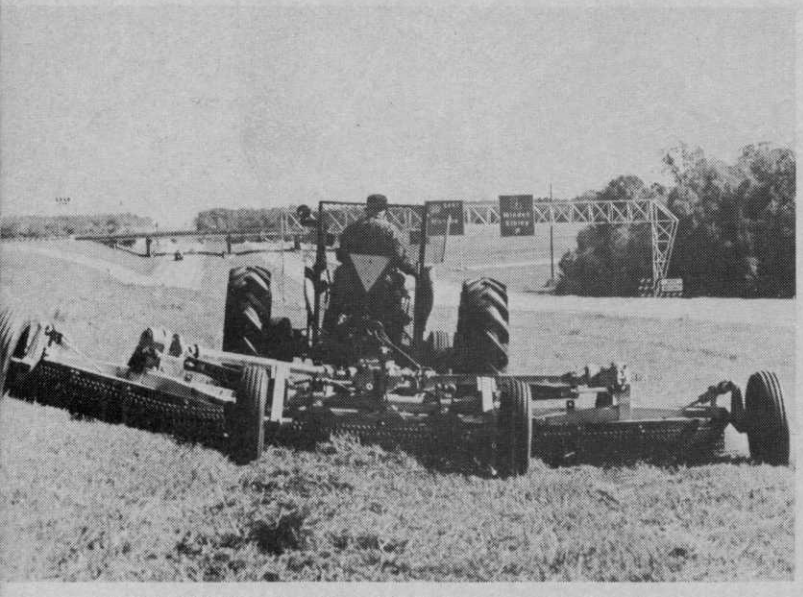
2055 White Bear Avenue
St. Paul, Minnesota 55109
Telephone 612-777-7461
SUBSIDIARY OF OUTBOARD MARINE CORP.

For More Details Circle (108) on Reply Card

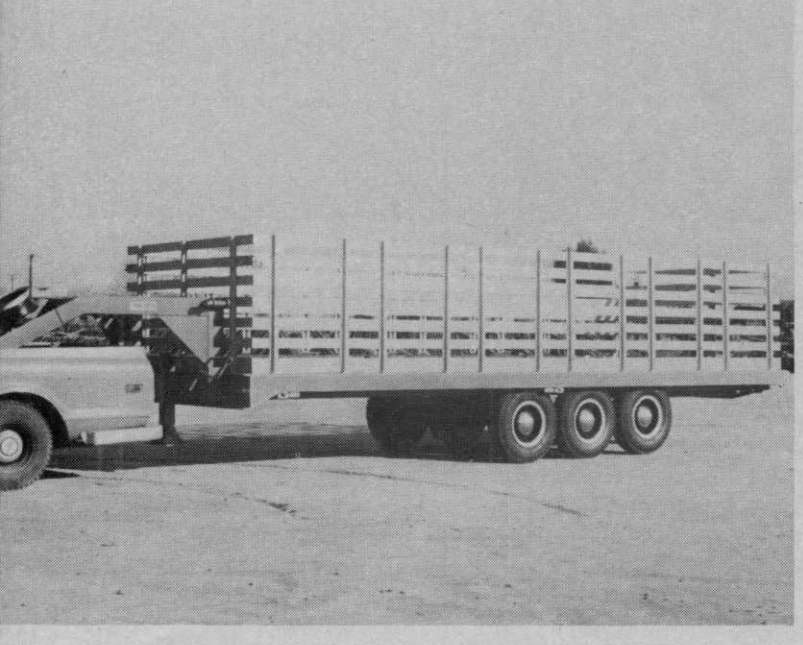


FLEXIBLE WING HIGHWAY MOWER, FMC Side-Winder, Minden, La.

The Side-Winder Flex Wing 15 is designed and built for heavy duty highway type vegetation maintenance. It cuts a 15-ft. swath with flexible wings on both sides to follow graded slopes and soft contours. The wings fold up with hydraulic lifts for easy transport at eight-foot width. The power train consists of two independent high-speed gear boxes on wings driven by a combination drive and transfer box on the center section. All gear boxes are equipped with clutches for better equipment protection. The wheels are camber adjustable. A swivel hitch on the tongue is connected to an automatic parallel lift system. Cutting height is adjustable from two inches to 12 inches. For more details, circle (701) on the reply card.

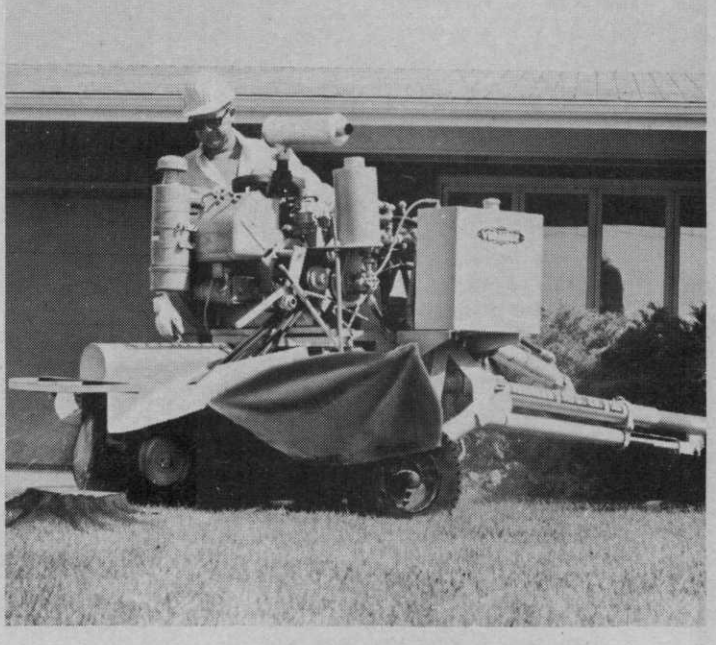
MODEL 75 TREE DESTROYER, Precision Chipper Corporation, Birmingham, Ala.

Precision Model 75 is a completely self-supporting system for converting entire trees, trunks, limbs and leaves into small chips in a few seconds. Feed through rate is about 125 ft. per minute. Maximum opening in spout is 22 inches diameter. No outside power source is needed. The 75", three-knife Precision Chipper is powered by Cummins 310 hp diesel engine. The heavy duty articulated knuckle boom loader has a 20 ft. reach and 200-degree swing with capacity at 15 ft. of 7,504 lbs. An air system is built in for air wrench to change knives. The hydraulically powered reversing conveyor is 25 ft. long with a 6110 chain. Custom-built trailer is 35 ft. long, 8 ft. wide and 12'9" over-all height. more details, circle (702) on the reply card.



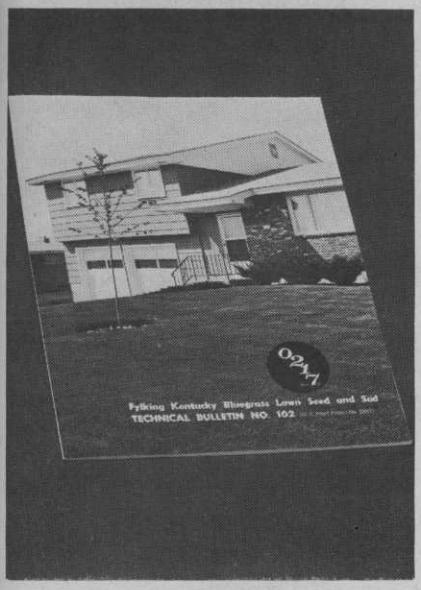
PICKUP TRUCK TRAILER, Jacobsen Trailer Co., Fowler, Calif.

This gooseneck track and flatbed trailer is said to carry the same weight as a truck at one-fifth the investment cost. Either type trailer can be pulled easily by a pickup truck, and has a load capacity up to 18,000 pounds. The "gooseneck" coupling comes about 6" to 8" forward of the drive wheel, which puts the hauling pressure on the whole pickup. An easy one-man hook up, the driver backs the coupler ball into open jaws of auto-lock coupler, that closes around the ball automatically. The all-purpose track trailer has a bed height of 17", length, 12x25'; width, 96"; with one to three axles. The flat bed stock size is 16x40' length; 36" height; 96" width; with one to three axles. For more details, circle (706) on the reply card.



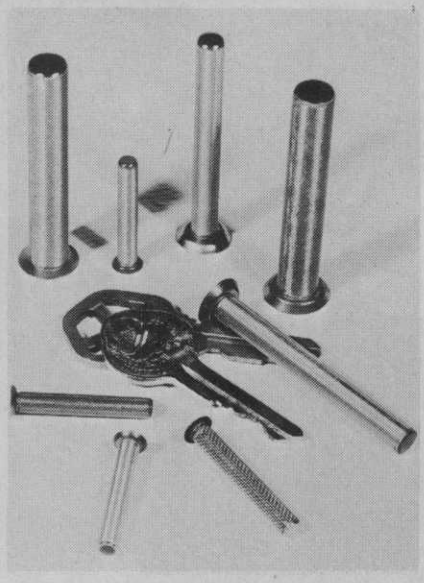
STUMP CUTTER, Vermeer Manufacturing Company, Pella, Ia.

An economical stump cutter, the Model 630, specially designed for hard-to-reach areas, can squeeze through a narrow 36" opening. Vermeer's compact 630 rips large stumps into chips down to 6" below the surface. Its revolving cutting wheel cuts a 50" wide swath without having to reposition the machine. Twenty carbide-tipped cutting teeth mounted on the wheel permit large cuts with each pass across the stump. A 30 hp Wisconsin engine supplies the power. A unique "reach-out feature" on the cutting wheel gives the operator pinpoint control when working next to streets, curbs, sidewalks, walls, etc. Low silhouette design permits cutting under low-handling obstacles or in restricted areas. For more details, circle (707) on the reply card.



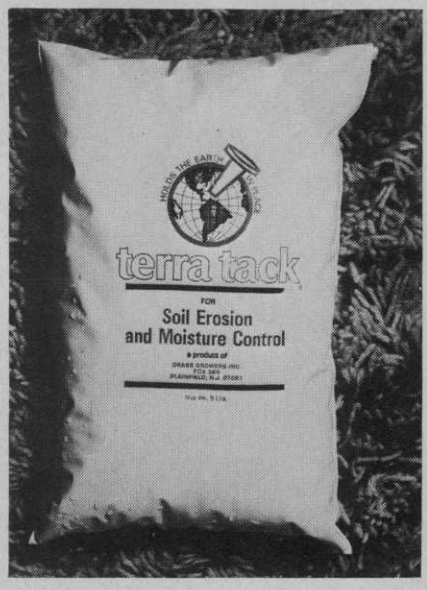
BROCHURE ON FYLKING 0217, Jacklin Seed Co., Dishman, Wash.

A new 12-page, full-color brochure, "0217® Brand Fylking Kentucky Bluegrass Lawn Seed and Sod Technical Bulletin No. 102," is now available on request. It describes the development of 0217 and discusses recommendations for planting and managing Fylking. The 0217 variety is disease and drought resistant. A cutting height of less than one inch suits Fylking well. For more details, circle (703) on the reply card.



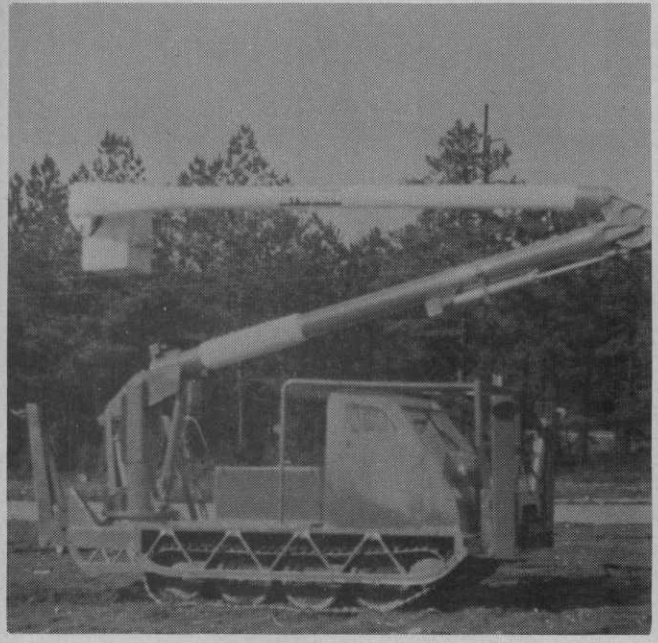
IN-LINE FILTERS, Mectron Industries, South El Monte, Calif.

Small in-line filters, ideal for liquid fertilizer and chemical spraying equipment, are available. Elements will fit all standard fittings. With nominal micron removal ratings from 2 to 300, the corrosion resistant filters will function at —65 degrees to +550 degrees F. The flange mounted filters are made from RIGIMESH®, a patented sintered stainless steel woven wire mesh. For more details, circle (704) on the reply card.



MULCH MATERIAL, Grass Growers, Inc. Plainfield, N.J.

TERRA TACK is said to curb soil erosion and improve moisture control of grass seeded areas. It is available in powder form and can be applied with conventional hydraulic seeding equipment. It also may be added to an aqueous slurry of seed and fertilizer and applied simultaneously. Soil so treated is porous enough to allow ample moisture penetration, but strong enough to provide run-off protection. For a free booklet, circle (705) on the reply card.

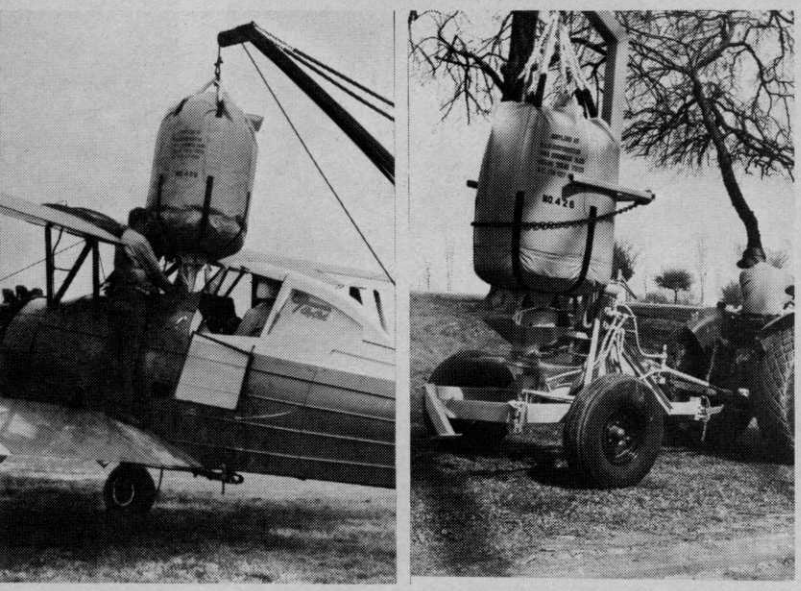


OFF-ROAD AERIAL LIFT, Skyworkers, Inc., Conley, Ga.

This unit is called the most versatile off-the-road aerial device ever built. It is composed of a Model 1045 Skyworker mounted on a Model S Bombardier. Its working height is 50 ft. It can be operated on a slope up to 25 degrees. This aerial device is fully insulated for right-of-way line work and is equipped for hydraulic tools. For more details, circle (708) on the reply card.

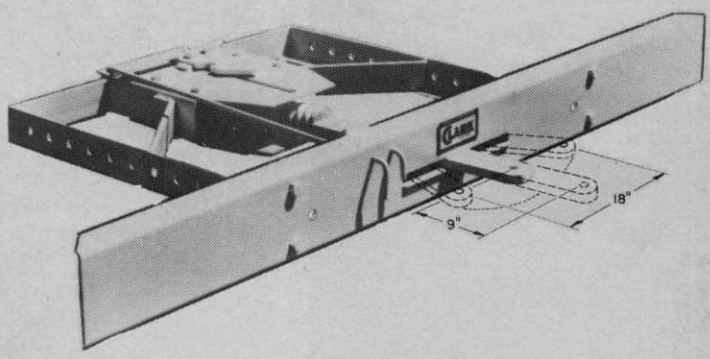
NEW SIZE FERTILIZER SPREADER, Herder Seeder Co.,

This new intermediate size is known as the Model 750 for 750 lb. (or 9.6 bu.) capacity. It will spread bulk fertilizers, granular chemicals and all kinds of seeds evenly and accurately. Coverage is from 10 lb. to 1,000 lb. per acre with width of spread up to 40 ft. This medium size, 3-pt. broadcaster is ruggedly constructed and is easy to operate. It features the same advantages as the firm's well-known 1,200 lb. model. For details, circle (709) on the reply card.



BAG HANDLING SYSTEM, B.A.G. Corporation, Dallas, Tex.

The gap is bridged between the 50 lb. bag and the pure bulk material handling systems. The new "One-Way Super Sack" is a combination of paper and polypropylene with polypropylene hoisting straps. It is about 42 inches in diameter, 52 inches high, and has a tare weight of 6 lbs. The load design is for a bulk density of 60 lb. material with a total allowable load of 2,100 lbs. With the advantages of a package and the economy of bulk shipping, it is a top-loading, bottom-discharge container. Handling the "Super Sack" is a one-man operation. Reusable flexible containers are also available. The specially-designed broadcast spreader shown is available. For more details, circle (710) on the reply card.

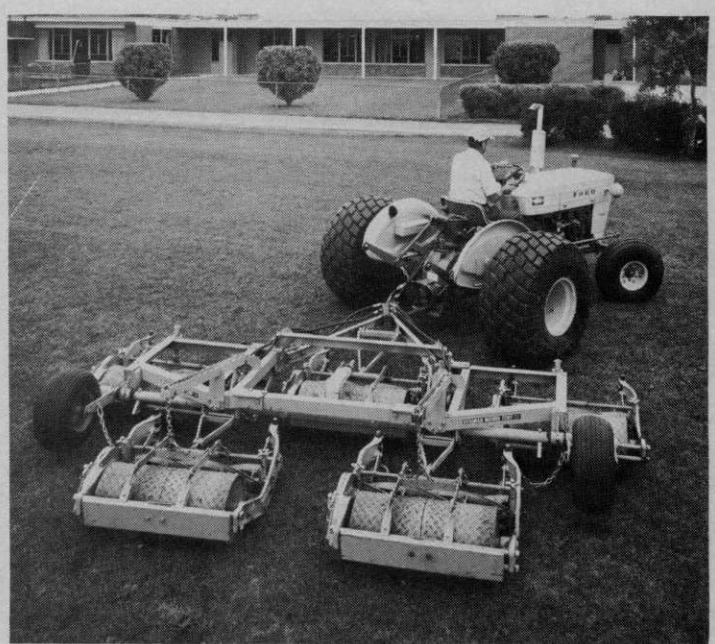


PICKUP TRUCK HITCH, Clark Manufacturing Co., Atherton, Mo.

This rugged combination bumper and hitch is designed to fit most half-ton and three-quarter-ton trucks. The heavy duty hitch (¾" x 3") can be extended nine inches for easier connection. When extended, the side swing of the hitch is 18 inches, and will retract and lock with reverse motion of the truck. Heavy shock springs on the bar absorb forward and reverse motion, and can be released by hand latches. The bumper is included with the hitch and has holes for attaching safety chains. For more information, circle (711) on the reply card.

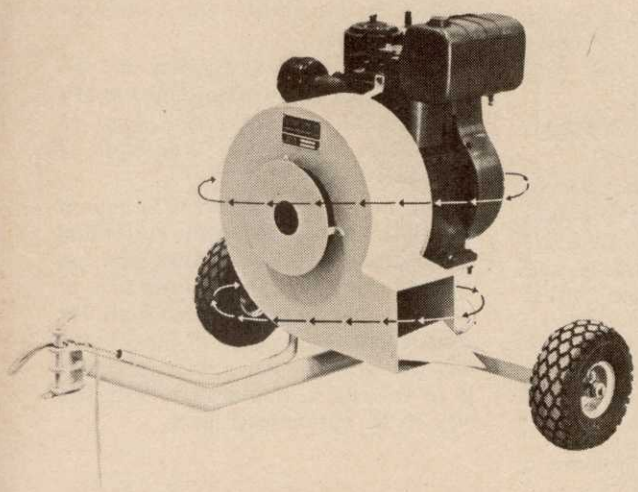
LAND LEVELER, Eversman Manufacturing Co., Denver, Colo.

Sod farmers are using the Eversman Automatic Land Smoother to bring fields to table top condition for even seeding, uniform germination and precision harvesting. An exclusive crank axle makes the automatic leveling action possible. Like a child's teeter-totter, when one end goes up, the other end goes down. The leveler's main wheels are placed outside the cutting blade to serve as feeler gauges. They follow the contour of the field and automatically adjust the depth of the cutting blade to the correct depth. Models can be operated from regular wheel tractors, from 3-plow to 5-plow models. Blade widths are 9' or 12', lengths of 32' or 45'. For more details, circle (714) on the reply card.



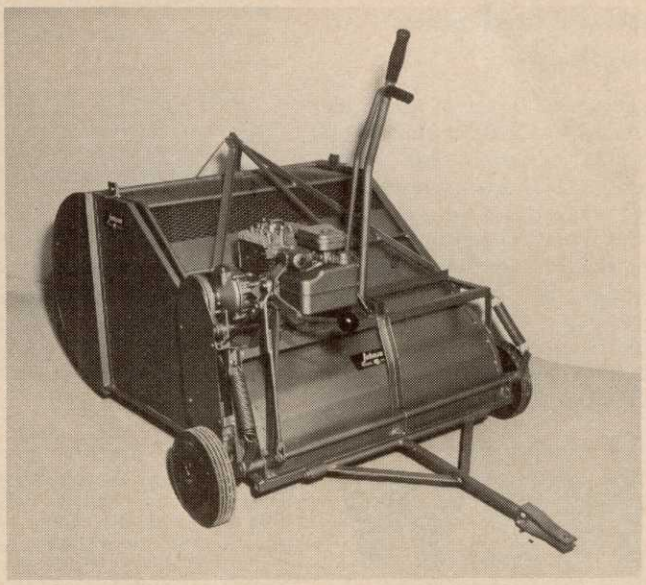
FIVE-GANG MOWER, Roseman Mower Corporation, Glenview, Ill.

The five-gang mower raises clear of ground for transporting. Use it with any utility-type tractor equipped with a hydraulic system to operate remote hydraulic cylinders. Available with roller or laminated rubber-tire drive. Also comes in three, seven and 11-gang models. Width of cut: 30" per unit. Over-all approximate cutting width is 6'10" for 3-gang; 11'2" for 5-gang; 15'6" for 7-gang; and 24' for 11-gang. Height of cut is about ½" to 3". Reels have a 30" cut and come with 5, 6, or 10 blades. A non-breakable, 12" diameter traction roller drive mounted to rear of cutting reel within side frames, eliminates bobbing of cutting reel. For more details, circle (715) on the reply card.



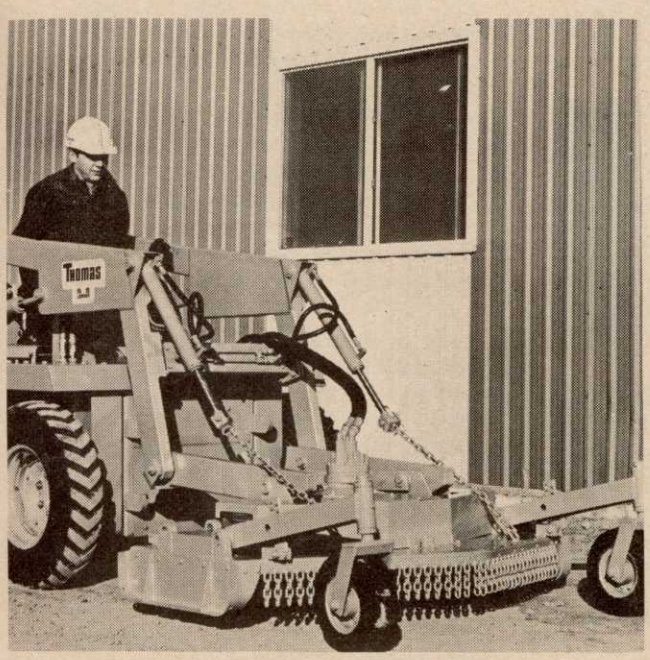
LEAF BLOWER, Hidden Valley Co., Akron, Ohio

The new Alderfer Leaf Blower is developed especially for golf courses to save time and serve several purposes. This 14 hp, high-velocity, self-cleaning blower is one in which blowing direction can be instantly changed from left to right, or right to left. Blowing direction is triggered from the driver's seat. The Alderfer Blower also is effective for blowing dew off greens and blowing away soil plugs after aeration of greens. Several important sales areas are open, and distributor-dealers are being sought. For more details, circle (712) on the reply card.



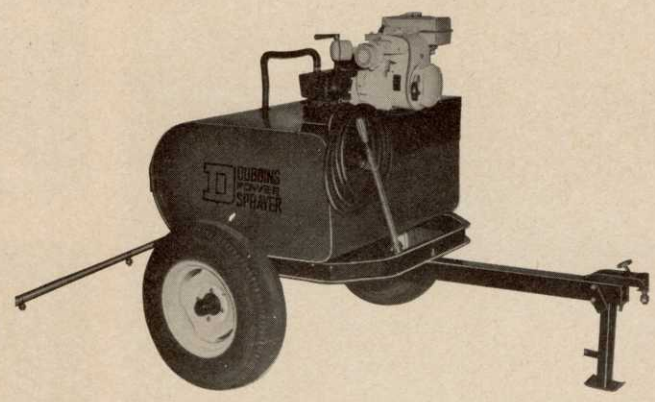
TERRA-COMB, Johnson Hydraulic Equipment Co.,

The new Johnson 'Work Horse' Terra-Comb is a pull-type unit easily handled by the average small garden tractor. It is the perfect machine for thatching in spring, picking up grass clippings in summer, and leaves in fall. It is powered by a Briggs-Stratton engine driving the pickup reel, that cleans a 34" wide swath and throws the materials into a 9 cu. ft. hopper. Unit is designed with end gate cover and can be emptied by simple lever operation. Pickup reel may be raised or lowered. For more details, circle (713) on the reply card.



ROTARY MOWER ATTACHMENT, Thomas Equipment, Ltd., Centreville, New Brunswick, Canada

A new rotary mower attachment has been introduced for the Thomas S/S Loader. The mower makes a 60-inch cut. Over-all width is 63 inches, and height of cut variable between 3 and 6 inches. The mower's three offset cutting spinners are driven by a v-belt from the unit's hydraulic motor. The reversible motor is protected against severe shock by an integrated hydraulic valve. The mower is mounted on extensions to the loader lift arms, and is supported by chains attached to the lift cylinders. Four quick-release pins secure the mower to the loader. For more details, circle (716) on the reply card.



POWER SPRAYER, Fimco, Inc., Sioux City, Ia.

Fimco, Inc., is now building a double cylinder pump sprayer for those who require 4 to 6 gpm, a power-packed 600 psi, and a larger tank. Model Number 55110-T features an anti-corrosive, baked-on plastic coating inside for longer life, a mechanical agitator, and a removable drain plug in the tank bottom. Available with 6' or 9' boom. For more details, circle (717) on the reply card.

NW Pesticide Applicators Go International

An aggressive group of pesticide applicators in the Pacific Northwest that recently initiated legal action against the federal government over the DDT issue has now expanded into an international organization.

Pacific Northwest Pesticide Applicators, Inc., on Feb. 20, became the International Pesticide Applicators Association, Inc.

President George M. Harrison said invitations already had been sent to chapters in California, Florida and British Columbia. He welcomed others.

New bylaws have been written, and additional information is available by writing Harrison, P.O. Box 66022, Seattle, Wash. 98166.

Purposes of the non-profit corporation, Harrison said, include:

1. To improve the standards of the pesticide application profession and to bring into closer union the members of the insect, disease and weed control industry and allied horticultural trades.

2. To promote goodwill and safe and ethical practices among members and create confidence of the public in the ability and reliability of members.

3. To promote discussion and interchange of knowledge and experience among members that may be helpful to raising the standards of pesticide applicators.

The new organization offers both group memberships and individual memberships. Annual dues are set at $150 per organization plus 10% of its total membership dues. Dues for individuals (members-at-large) are $25 per annum. An annual meeting is to be held in September, with the city to be announced later.

NEW 72" AND 90"

TERRAIN KING FLAIL MOWERS

The cutter with the "Quick Change" Knives

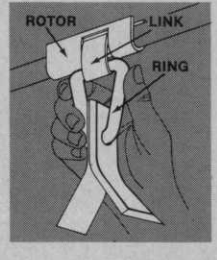
The knives in Terrain King's new Flail Mower can be changed without tools – from a selection that tailors the Flail Mower to your exact requirements. And the knives are reversible for extended service life.

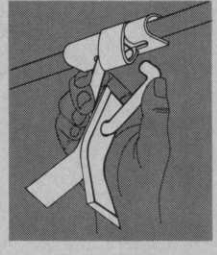
Extra heavy duty bearings and rugged frame and roller contribute to long, trouble-free life.

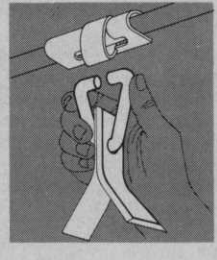
The Flail Mower is especially safe for the operator, pedestrians and property. Guards for both the drive line and the gear box are standard. The rotor enclosure and a heavy flap type deflector positively control flying debris.

The Flail Mower adjusts easily for cutting heights from 1-1/4" to 7". It is available in lift or pull models, in 72" and 90" cutting widths.

Many of your mowing needs fall easily within the Terrain King Flail Mowers capabilities. The Terrain King One Complete Mowing System, comprising a wide selection of single unit Rotary Mowers, the 15' and 25' Wide-Swath Rotary Mowers, the versatile Slopemower* and the unique RAILBIRD®, can handle the rest.







Engler Manufacturing Corporation
4444 Center Street, Dept.:WT-5
Houston, Texas 77007
(713) 869-9261

TERRAIN KING®

*Slopemower and RAILBIRD are trade marks of Astron Corporation, a subsidiary of Engler Manufacturing Corporation.

Herbicides Most Harmful When Being Handled

A pesticide safety specialist with the University of California Agricultural Extension Service warns that even herbicides are dangerous to humans, especially to those who work with them in the field.

"Every worker handling toxic materials should be advised of possible danger to him, and should be instructed on correct rates of application and proper protective measures," Dr. J. Blair Bailey, entomologist, told the 800 or more weed control specialists at the recent California Weed Conference.

"Possibly more important than this is for you to tell workers **in advance** what to do in case of a severe splash or spill of the cencentrated chemical into eyes or onto skin."

Citing the latest State Department of Public Health, Bureau of Occupational Health, statistics, Dr. Bailey said in 1968 there were 66 cases of poisoning attributed to herbicides and defoliants, for sure. Since only workers covered by Workmen's Compensation insurance are counted, the number of poisonings is certainly higher, he said. In addition, he noted there were about 500 reports of eye irritation and "chemical burns" from physicians that year.

There were no occupational deaths attributed to pesticides that year, but it was only the third year out of the past 18 in which deaths were not reported, Dr. Bailey said. Usually, deaths occurred because someone was ignorant or careless and left chemicals where they could be accidentally consumed by humans, mostly children, or by livestock.

"But not all deaths from pesti-

Forty-two persons attended the University of Tennessee's second annual one week winter short course in turfgrass management, under the direction of Dr. Lloyd M. Callahan, associate professor of agronomy. In attendance were golf superintendents and their assistants, park managers and supervisors, grounds managers, horticulturists, landscapers, and turf product sales representatives. From the left, they are: Front row: C. Long (cropped out of picture), R. V. Smith, R. V. Tega, Dr. L. M. Callahan, R. W. Owenby, J. K. Myers, G. E. Herron, W. H. Patty (cropped out); second row: W. S. Kellogg, C. A. Pyron, L. C. Martin, D. Henley, J. O. King, J. West, L. Bacon; third row: Dr. J. G. Staley, D. Kenney, M. R. Moore, W. F. Schoenfield, P. B. Parker, W. E. Womac, W. E. Bell, C. A. Hancock, D. A. Fowler; fourth row: F. E. Browning, B. Shearin, H. J. Felts, J. R. Maurer, H. M. Shoemaker III, D. Lenear, C. H. Romines, D. P. Miner; fifth row: F. T. Bradley, C. H. Wagner, L. F. DeLozier, F. Self, C. L. Chandler, F. S. Atchley, C. R. Chambers, R. P. Keener, J. M. Carson, P. D. Harris, and R. L. Phipps.

cides are caused by eating or drinking them from a container," he said. "In the past few years throughout the country, at least 95 cattle have died from grazing on grass which had received accidental drift from arsenical herbicides from near-by spraying operations. Arsenic trioxide and sodium arsenite were the materials most frequently causing these deaths. However, one of the newer organic arsenical chemicals, MSMA, caused the deaths of a two-year-old girl and 41 beef cattle during 1967-68."

Dr. Bailey said absorption through the skin plus inhalation are the most common ways herbicides attack people, noting oral ingestion of pesticides by workers has not often occurred.

He reminded the specialists there are four toxicity ratings on pesticide labels:

1. The signal words "DANGER," "POISON," and the skull and cross bones symbol are required on the labels for all highly toxic compounds.

2. The word "WARNING" is required on the labels of all modestly toxic compounds.

3. The word "CAUTION" is required on the labels for all slightly toxic compounds.

4. No special words or symbols are required on compounds with an acute oral half lethal dose (LD_{50}) greater than 5000 mg/kg. However, unqualified claims for safety are not acceptable on any label and all labels must bear the statement "Keep out of reach of children."

INTERESTED IN AQUATIC WEED CONTROL?

Join the Hyacinth Control Society —a group dedicated to control of all noxious weeds.

Individual Memberships $5/yr.
Commercial Companies $95/yr.

Annual Meeting: July 11-14, Hotel Manger, Tampa, Fla.
(Commercial members invited to exhibit free)

Contact **Stanley Abramson**, Society President
5414 North 56th St., Tampa, Fla. 33601, Phone (813) 626-2111

For More Details Circle (130) on Reply Card

You, too, should be curious about this magnificent young beauty among lawn grasses. 0217® Brand Fylking Kentucky bluegrass is a great green because it greens up earlier in spring, stays green longer in fall. Curiously, Fylking thrives when cut at ¾ inch (even as low as ½ inch) making possible backyard putting greens with no special care required. Its curious name, Fylking, refers to its quality of dense root growth that crowds out weeds. It's a Swedish word because Fylking was discovered in Svalof, Sweden, and developed in America. Internationally tested, Fylking has proven superior over a 12-year period. Fylking is more disease-resistant, produces no seedheads, takes heavy traffic and resists drought. Get curious about this wonderful lawn. Available now at local wholesale seed or sod distributors.

0217 BRAND

FYLKING KENTUCKY BLUEGRASS

U.S. Plant Patent 2887

Another fine product of Jacklin Seed Co., Inc.

For More Details Circle (127) on Reply Card

Lincoln, Neb., Ordinance Authorizes Tree Planting

On Mar. 22, 1971, the City Council of Lincoln, Neb., passed an ordinance authorizing the City Park and Recreation Department to plant trees on the city streets of Lincoln. This was in keeping with its past policy of being the state leader in the care of its city trees.

Lincoln has had a control program for Dutch Elm Disease since 1964 and feels this program has been very successful. To date, 12% of the original population of American Elms has been lost.

To maintain its title as a City of Trees, Lincoln felt this was the time to implement the City Tree Planting Program. A survey of the trees on some of the city streets has been completed, and on these streets the varieties of trees to be planted have been selected.

Lincoln plans to use 28 different varieties. The accent will be toward smaller flowering trees matched to the planting space available.

The new ordinance prohibits planting trees closer than three feet to any sidewalk or curb. This will necessitate considerable planting behind the sidewalk. Fortunately, most of the property lines in Lincoln are four feet behind the sidewalk. This will make it quite easy to plant behind the sidewalk and not encroach on private property.

The City of Lincoln currently maintains a City Nursery stocked with 2,079 trees. A portion of these trees will be planted on the streets. Present department plans call for an expenditure of $34,000 to purchase 2,800 trees in the spring of 1972. — DONALD J. SMITH, director, Department of Parks and Recreation, Lincoln.

* * *

Burst of Interest for Old Circular

We enclose a copy of our Extension Circular #148, for which we suddenly have been receiving many requests. It surprised us until we read in one of the requests that they had seen it listed in your March, 1971, issue. If you had seen this bulletin before you listed it, we are wondering if you would have offered it. Factually, for 1962, it was correct — but methods and chemicals have changed tremendously since that time. Of course, the circular is still available, under that date, but we are asking ourselves if you should print some sort of "corrective thinking" in your next issue to keep your readers straightened out with the fact that they are receiving an outdated circular. — B. MONAHAN, publications, Cooperative Extenson Service, University of Rhode Island.

EDITOR'S NOTE: We regret the outdated circular has been publicized. In our screening process, we tried to list only those publications that were published in the past two or three years. Unfortunately, the list of publications available from Rhode Island did not indicate that Circular #148 was nine years old.

insect report

INSECTS OF ORNAMENTALS

BOXWOOD LEAFMINER

(Monarthropalups buxi)

VIRGINIA: Damage heavy on large planting of American boxwood in Amelia County. Reports indicate heavy damage statewide.

AN ARMORED SCALE

(Odonaspis penicillata)

FLORIDA: All stages collected on stems and leaves of bamboo plant at Summerland Key, Monroe County. This is a new county record.

HOLLYHOCK WEEVIL

(Apion longirostre)

MISSOURI: Adults collected in blacklight trap in Platte County. This is a new county record.

TREE INSECTS

A CONIFER APHID

(Cinara curvipes)

WASHINGTON: Damage serious to recently transplanted alpine firs brought to Yakima County from Cascade foothills.

BAGWORM

(Thyridopteryx ephemeraeformis)

ARKANSAS: Populations epidemic during summer 1970 in northwest area. Radiographs show heavy winter egg survival. Should survival be above average, populations may be widespread and severe during 1971.

BARK BEETLES

(Dendroctonus spp.)

ALABAMA: *D. frontalis* (southern pine beetle) and *D. terebrans* (black turpentine beetle) damaged isolated pines in Mobile County; numerous pines died during March. SOUTH CAROLINA: *D. terebrans* remains at epidemic level in Sand Hills and Cheraw State Forests located in north-central area of State.

SOUTHERN PINE BEETLE

(Dendtoctonus frontalis)

Populations increased to serious levels in Tusquitee and Cheach districts of Nantahahala National Forest in western NORTH CAROLINA, and in Tellico district of Cherokee National Forest of TENNESSEE. Heavy timber losses occurred in Accomack County, VIRGINIA. Populations in SOUTH CAROLINA collapsed during summer 1970, currently very light. Also light in TEXAS, LOUISIANA, and MISSISSIPPI, but heavy brood densities could result in timber losses this spring.

WALKINGSTICK

(Diapheromera femorata)

ARKANSAS: Defoliation of hardwoods heaviest in recent years. Heavy defoliation on 85,000 acres out of 132,729 acres.

SCS Announces Specialty 'Conservation Grasses'

Commercial nurseries will be getting several more grasses from USDA's Soil Conservation Service this year, reports Wilmer Steiner.

Steiner supervises the work of 20 SCS Plant Materials Centers around the country.

Grasses recently released include Barton Western wheatgrass, a disease-resistant, superior forage producer for areas of the Great Plains, and "Tegmar" intermediate wheatgrass, a dwarf-type grass for the far western states. Tegmar produces tight sod, is drought-tolerant, and is good for stabilizing roadsides or other areas highly prone to erosion that need low, slow-growing ground cover.

This year, says Steiner, SCS hopes to release several more grasses to commercial nurseries through local soil conservation districts or state crop improvement associations. Among them:

- DEERTONGUE, a perennial panicgrass that stabilizes and beautifies strip mine spoil areas, steep ditches and highway cuts and fills. It has coarse, broad leaves, great seedling vigor, a height of 2½-3 feet and high tolerance for acid soils. It was developed at the Big Flats, N.Y., Center, in cooperation with Pennsylvania State University.
- "CAPE" AMERICAN BEACHGRASS, for use on East Coast beaches and sand dune areas from North Carolina to Massachusetts. Selected at the Cape May, N.J. Center, in cooperation with Rutgers University, it has proved more vigorous than other types of beachgrass tested.
- MAIDENCANE, a tough, water-loving native perennial of the Southeastern U.S. for use on the banks of drainage ditches and manmade lakes. Maidencane reduces scouring and wave action damage and is a good forage grass for wet, marshy areas. The major work on improving hardiness and adaptability is being done at the Coffeeville, Miss., and Brooksville, Fla., centers.

Charcoal Need Not Hinder Crabgrass Herbicides

An agronomist who three years ago found a way to reduce the harmful side effects of herbicides by using activated charcoal has since found that charcoal need not diminish the effectiveness of herbicides later applied for crabgrass control.

John A. Jagschitz, professor of plant and soil science at the University of Rhode Island, reported his findings at the Northeastern Weed Science Society.

In 1968, he had published a study on how charcoal could be used to deactivate herbicide residues in turfgrass seedbeds.

According to his most recent study, although greater amounts of charcoal applied to turf caused greater reductions in the effectiveness of herbicides subsequently applied, by increasing the amounts of herbicides, the retarding effect of the charcoal was counteracted.

Effectiveness of standard rates of three herbicides—Betasan, Dachtal and Tupersan—was reduced when they were applied to turfgrass treated five months earlier with 100 pounds of charcoal for each acre. But charcoal applications made 17 months before the herbicide treatment were far less inhibiting than those made five months before, he said. There was no reduction in the effectiveness of three other herbicides—Bandane, Planavin, and tricalcium arsenate—by the previously applied charcoal, according to the study.

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Nematodes May Provide Another Answer to DED

When an Agricultural Research Service nematologist examined shot-hole borers that had killed a peach tree, he found the insects, a species of bark beetle, to be parasitized by nematodes. Now, he is trying to manipulate these nematodes to attack the bark beetle that carries Dutch Elm Disease.

Dr. William B. Nickle hopes the elm bark beetle can be debilitated or sterilized effectively with parasitic nematodes. He theorizes that, like another nematized insect, the face fly of cattle, these beetle populations might be reduced to a level where they would no longer be a major problem. The elm bark beetle has no nematode parasites at present.

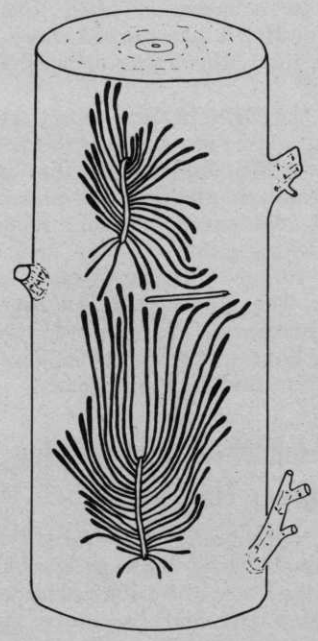
In his initial studies, Dr. Nickle learned that the nematode parasites, *Neoparasitylenchus rugulosi,* affect the reproductive behavior of shot-hole borers and finally kill them.

Normally, a female shot-hole borer penetrates the bark of a fruit tree, leaving a shot-size hole. She then makes a gallery about an inch long parallel to the tree stem and lays eggs on both sides of the gallery. After hatching, the new insect larvae mine out lateral tunnels from the sides of the gallery, forming a pattern resembling legs of a centipede. Heavy infestations, especially on trees weakened by drought, wind, or mechanical injury, rapidly kill fruit trees such as cherry, peach, pear, apple, and choke cherry.

However, Dr. Nickle learned that when the female beetle is parasitized by the nematode, she makes horizontal galleries and doesn't lay eggs. After she dies, hundreds of nematodes emerge from her head.

These emerging nematodes are fourth-age male and female larvae which molt, become adults, and mate within two or three days in the gallery. Then the males die. The impregnated female nematode seeks out a larval bark beetle in a nearby gallery and enters the insect's body to start a new infestation. Inside the insect's body, the nematode takes nourishment and expands into the large, swollen, egg-producing form.

About the time the beetle becomes adult, the female nematode inside the insect lays her eggs. After hatching, the young nematodes continue growing and eventually exit from the beetle's head. The beetle is killed after she has transported the nematodes to a new gallery system where the nearby healthy beetles are attacked.



Normal borer galleries run parallel to the branch with lateral lines formed by larvae. Parasitized borers mine horizontal galleries without lateral lines.

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industry people on the move

JERRY PFARR, former associate editor of Golf Digest magazine, has been named midwest facility development consultant for the National Golf Foundation.

* * *

GEORGE HARRISON has joined the staff of Washington Tree Service through the purchase of a business division he was managing. Stan Raplee, president of Washington Tree, announced that all hydroseeding equipment and contracts have been purchased from Malmo Landscapers Northwest.

* * *

VERNON C. BALLARD has joined TUCO Division of the Upjohn Company as the agricultural chemicals sales representative in Virginia and West Virginia.

* * *

E. T. WALGENBACH is the new Northern California and Nevada representative for Union Carbide Corp.

* * *

DOUGLAS W. SCHIMMEL has been elected vice-president, personnel, Velsicol Chemical Corporation.

* * *

WELTON W. MOOREHEAD has been promoted to manager of Thompson-Hayward Chemical Company's Tulsa, Okla., branch office.

* * *

PAUL SANKER is the new vice-president of operations of Valley Crest Landscape, Inc., division of Environmental Industries Inc., Encino, Calif.

* * *

RAY O. BENTLEY has become branch manager of the New England division of Lofts Pedigreed Seed, Inc., Bound Brook, N.J.

* * *

DR. ELTON L. CLARK, formerly general manager of the Chipman Division of Rhodia, Inc., has been elected a vice-president of Rhodia.

* * *

JERRY BOESEL is the new northern California district manager for Rain Bird Sprinkler Manufacturing Corporation.

* * *

ROBERT L. SLEIGHER is the marketing manager of Solo Motors, Inc.

* * *

DR. LOUIE T. HARGETT has been named director of product development for the Chipman Division of Rhodia, Inc. Formerly of Geigy, he is an entomologist and plant pathologist.

* * *

DOW CHEMICAL COMPANY has elevated C. Benson Branch to president and chief executive officer on the announcement that H. D. Doan is retiring.

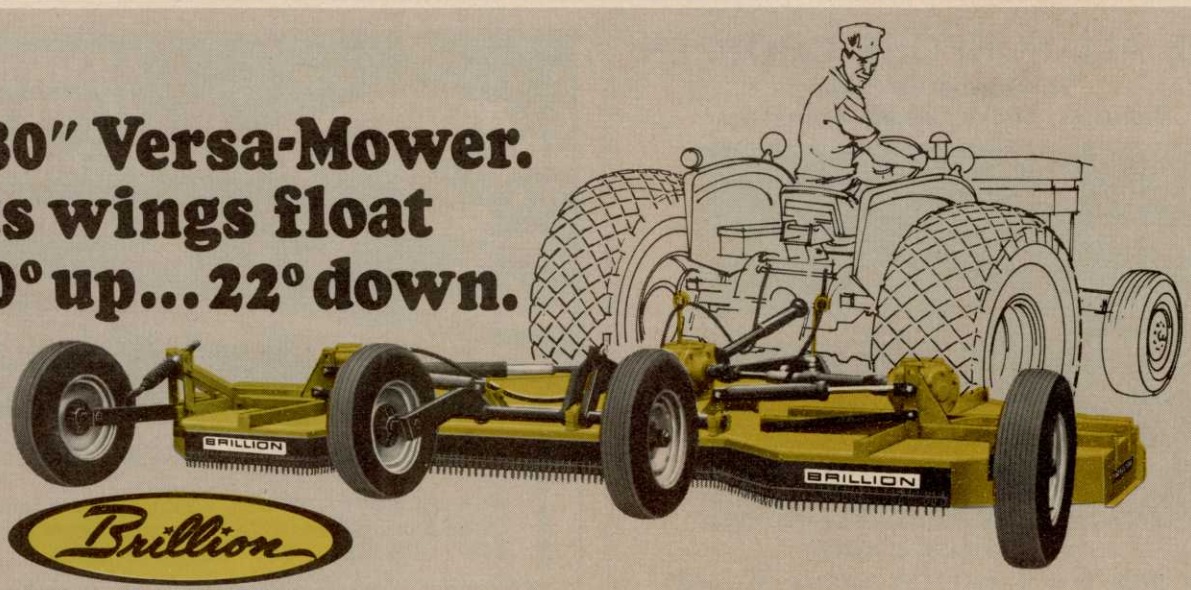
* * *

H. G. BOSCH is the new president of Chemagro Corporation, Kansas City, Mo.

* * *

JAMES R. FISHER has been appointed an assistant agronomist in the Turfgrass and Seed Inspection Service of Maryland's State Board of Agriculture.

180" Versa-Mower. Its wings float 60° up... 22° down.



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Stanley Clarke puts his new sand trap machine into action before the South Florida Golf Course Superintendent's Association.

William J. Brennan demonstrates the chemical spraying of golf courses by helicopter. Photos courtesy of Miami-Metro Department of Publicity and Tourism.

Sand Trap Rig, 'Copter Seen as Labor Savers

Two Miami men are pioneering in South Florida golf course maintenance with imaginative labor-saving techniques, according to Paul Turcotte, president of the South Florida Golf Course Superintendents Association.

The two new approaches to solving ever-increasing labor costs are a riding-type, sand trap machine and chemical spraying by helicopter.

The sand trap machine was developed by Stanley Clarke, of Miami Springs, Fla. Former Vietnam helicopter pilot William J. Brennan has launched the aerial spraying of golf courses.

"Either golf course superintendents have to mechanize or we go under, largely due to the present cost of hand labor," explained Turcotte, manager of the City of Miami LeJeune golf course.

"For example, it would take five men to rake the sand traps, but with this new machine one man can do the job in the same amount of time.

"Whereas it used to take a week to spray a golf course, you can now do

THE ALL-PURPOSE CHOPPER

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it by helicopter in two or three hours and very accurately," Turcotte added.

The device Clarke designed looks a lot like the common power lawn mower which can be ridden. But the Trapmaster model can maintain 100 sand traps in an eight-hour day.

Powered by a seven horsepower, four-cycle gasoline engine, the Trapmaster can handle all types of contours, turning almost on a dime, and can also be used for dragging in top soil after top dressing, as well as raking.

The chemical spraying of golf courses by helicopter, though a fairly new concept in South Florida, has been applied in the northern United States and is similar to the accepted practice of crop-dusting.

Clarke, property manager at the LaGorce Country Club on Miami Beach, operates the Stanley Clarke Equipment Co., Inc., at 665 Mokena Dr. in Miami Springs. Brennan, a graduate of North Miami High, is with Crescent Airways at the West Perry Airport in Hollywood, Fla.

BOOK REVIEWS

TURFGRASS PESTS. Manual 41. $2.00. Agricultural Publications, Office, University of California, Berkeley, Calif. 94720, or from Extension offices throughout the state.

A new University of California publication uses 72 color photographs and simple diagrams to explain turfgrass weeds and pests and how to control them.

The 50-page booklet has a particularly useful chapter for small turfgrass growers which tells how to measure your property and convert "gallons per acre" formulas to your use. Other chapter headings cover pesticide handling, weeds, insects, diseases, nematodes and rodents, and there is a glossary of terms.

Along with it comes a pamphlet describing up-to-date information on chemicals and recommended dosages for controlling pests and diseases. The larger manual makes no attempt to keep up with changing regulations or technology in the pesticide industry.

Noting that "a healthy grass is the best means of pest control," the publication warns growers to consider improving management practices as a first step in reducing pest problems before applying chemical controls.

does more than move trees.

You can dig, move, ball and transplant large-size trees with Vermeer's 30-30 Tree Spade . . . but that's just half the story. We've mounted this economical, labor-saving, tree-moving unit on one end of Vermeer's heavy-duty, multi-purpose M30 tractor. On the opposite end you can quickly mount a hydraulic loader, or a combination blade-backhoe unit, or a big 5' wide dozer blade. And, for even more versatility, Vermeer has a heavy-duty trencher attachment you can mount in place of the tree spade . . . for open field trenching of service lines, irrigation lines etc. Here's a highly maneuverable, center-articulated, 30 hp unit, with fully enclosed drive system and 4-speed transmission—an all-in-one landscaping machine for nurseries, tree service firms, municipalities and landscapers. Let us demonstrate for you!

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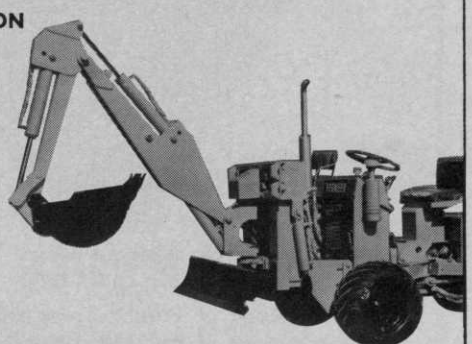

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may be mounted on opposite end from the tree spade. Choice of 3 bucket sizes. Hydraulically angled 12" x 60" blade.

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New England Producers Publish Sod & Soil Specs

A five-section specifications booklet for sodding and soil preparation has been published by the New England Sod Producers' Association, Inc.

Patterned after a Maryland-Virginia publication, the first of its kind, the New England booklet is available to architects, landscape and general contractors, building committees, grounds maintenance supervisors and homeowners. Copies are available from New England Sod Producers' Association, Inc., P.O. Box 6364, Sta. A, Hartford, Conn. 06106.

The five sections in the 16-page booklet consider: Specifications for subsoil preparation where topsoil is to be added; specifications for topsoil material and application; specifications for fertilizer and lime materials and final soil preparation; specifications for sod materials and installation; and specifications for maintenance of installed sod.

An appendix recommends varieties of turfgrasses best suited for the New England area.

trimmings

DONALD S. REEVES, 64, of Westfield, N.J., a vice-president of Asplundh Tree Expert Co., died March 22 of a heart attack. Reeves had been with the Jenkintown, Pa., tree company for 35 years and had been named vice-president and New Jersey area manager in 1956.

* * *

TOBACCO'S NICOTINE is good for something, writes nurseryman Norman H. Cannon of Bridgeville, Del. "The holly midge, *Asphendylia ilicicola,* Foote is cause for failure of berries to turn red on trees of *Ilex epaca.* After three years of failure to obtain satisfactory midge control using the latest in systemics and insecticides, one researcher disgustedly blew cigarette smoke into a quart jar containing live adult midge. Based on trials in May, 1970, 98% control of the midge can be achieved by thoroughly spraying all inside surfaces of leaves, twigs, and branches of pistillate epacas with nicotine sulfate 40% at two tea-

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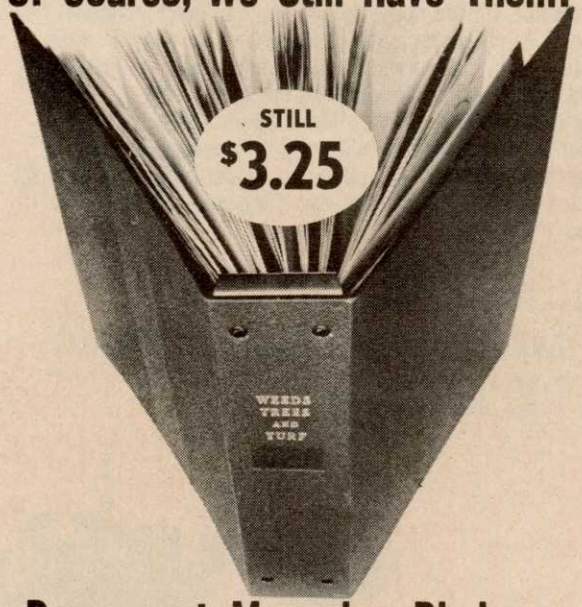

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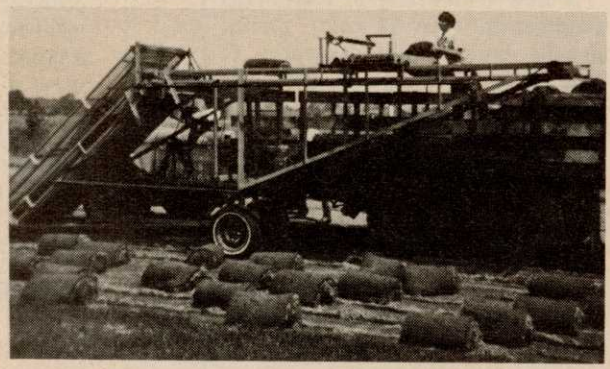

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spoons per gallon of water (soap flakes added). Timing of spray is critical. Application must be made on the fourth or fifth day after opening of the first bloom. A second spray, two or three days later is recommended."

* * *

TO PROVE DDT ISN'T HARMFUL, a California pest control operator and his wife, Mr. and Mrs. Robert Loibl, are taking DDT pills. The dosage is said to be 300 times the average a person would consume in a normal daily diet. In fact, Loibl says, since he and his wife began taking 10 milligrams per day, he feels better, his appetite has picked up, his wife's dandruff has disappeared and her teeth and gums are healthier.

* * *

A SCHOLAR DOLLAR TOURNAMENT is being promoted by the Virginia Turfgrass Council to raise money for the Virginia Turfgrass Scholarship Fund. The council has asked each golf course superintendent to hold a "Closest to the Hole" golf tournament each Saturday during the month of June. The entry fee of $1.00 would be forwarded to the fund.

* * *

AN X-RAY MACHINE to detect disease and insect infestations in trees has been developed by Picker Corporation. The device resulted from an idea conceived by USDA's Forest Service laboratory at Delaware, Ohio. The machine can X-ray thicknesses up to 16 inches.

HOW DO YOU WASH a dirty pine tree? In San Diego, park maintenance supervisor George Kempland went to the fire department. He had noted that firemen practiced their skills with periodic drills in a parking lot. Rather than just wasting the water, he proposed they wash trees for him while they practiced. A recent project involved washing the grit from about 100 pine trees in Presidio Park. The washing, said Kempland, is to reduce the possibility of pollution damage.

index to advertisers

Agtronics Mfg. Co.	58
Amchem Products Co.	14
Applied Biochemist, Inc.	22
Asplundh Chipper Co.	31
Bowie Industries, Inc.	25
Brillion Iron Works, Inc.	55
Buckner Industries, Inc.	3rd Cover
Buffalo Turbine	54
Chanderlin Seed Co.	32
Conwed Corporation	5
Diamond Shamrock Co.	21 and 35
Dow Chemical Co.	6
Du Pont Company	2nd Cover
Engler Mfg. Co.	50
Fargo Foundry	15 and 16
Geigy Agricultural Chemicals	29
Hadfield Sod Roller Co.	58
Herd Seeder Co., Inc.	30
H. D. Hudson Mfg. Co.	53
Hyacinth Control Society	51
Hypro, Inc.	24
Jacklin Seed Co.	51
John Bean Div., FMC Corp.	23
Lakes Supply Co., Inc.	40
Lindig Mfg., Inc.	56
Lofts Pedigreed Seed, Inc.	4th Cover
Miller Tilt-Top Trailers	43
Mitts & Merrill, Inc.	59
Mobile Aerial Towers	44
F. E. Myers & Bro. Co.	39
National Mower Co.	20
Niagara Chemical Div., FMC Corp.	41
Omark Industries, Inc.	3
Ousley Sod Company	60
Rain Jet Corporation	30 and 56
Ryan Equipment Co.	45
Selma Trailer and Mfg. Co.	40
Servis Equipment Co.	33
Shell Chemical Co.	37
Stihl American, Inc.	13
Union Carbide Corp.	11
Velsicol Chemical Corp.	8 and 9
Vermeer Manufacturing Co.	57
Wayne Manufacturing Co.	17

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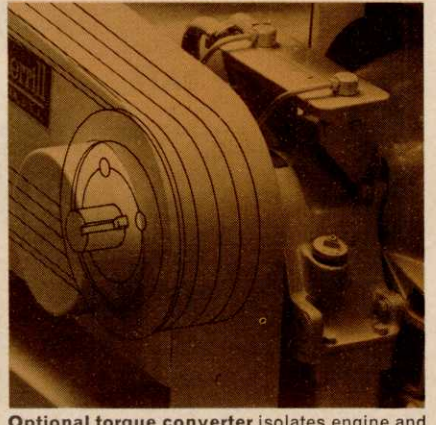

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VERMEER model 18 series 188, $2,800.00; 1970 Asphundh 12" 6 cylinder chipper, $3,600.00. Hardie sprayer, 35 GPM, 200 foot hose, $650.00. 1962 42" Skyworker bucket on Ford chassis, $3,350.00. 1968 5T Alenco crane on Ford chassis, $12,500.00. Osborne Brothers Tree Service, Mentor, Ohio 44060. Phone 946-4355.

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1966 DODGE with 1967 Prentice hydraulic log loader, 14' bed, $8,500.00. Bob's Tree Service, Des Moines, Iowa 50311. Phone 277-0175.

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